SPINAL CURVATURE
THEORY & CURE

GEORGE N. EPPS

21758/C

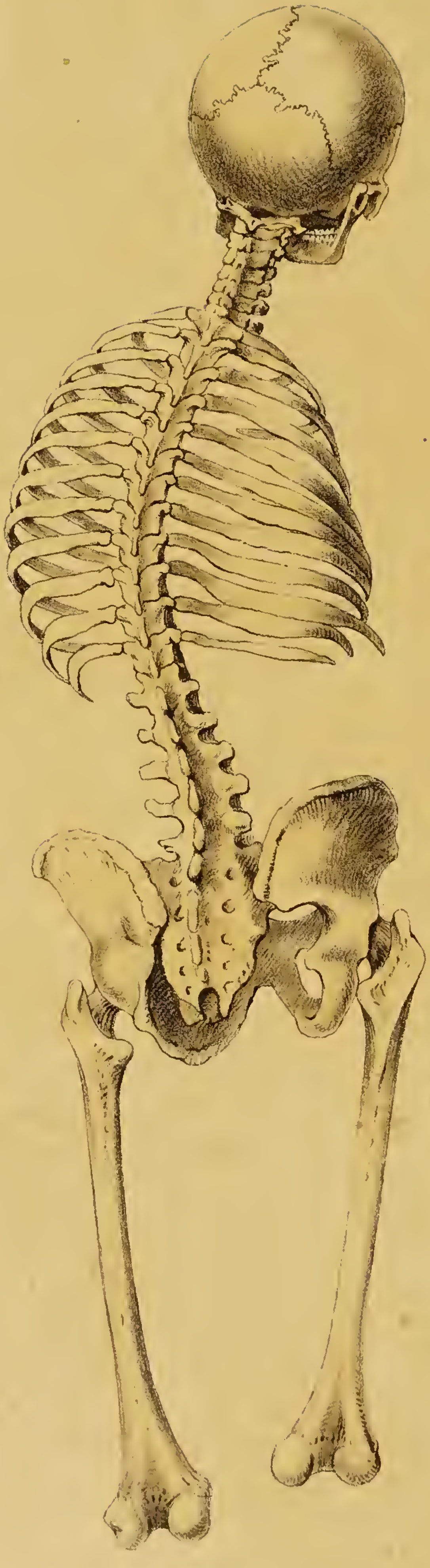
H. XLVIII. s
19

Digitized by the Internet Archive
in 2016

https://archive.org/details/b22008391

SPINAL CURVATURE.

NHE I



SPINAL CURVATURE,

Its Theory; its Cure:

GIVING A
DESCRIPTION OF THE ANATOMY OF THE SPINE AND THE PARTS
IN RELATION THERETO,

ILLUSTRATED BY CASES AND COLOURED PLATES.

BY
GEORGE N. EPPS,
SURGEON TO HARRISON'S SPINAL INSTITUTION, &c. &c.

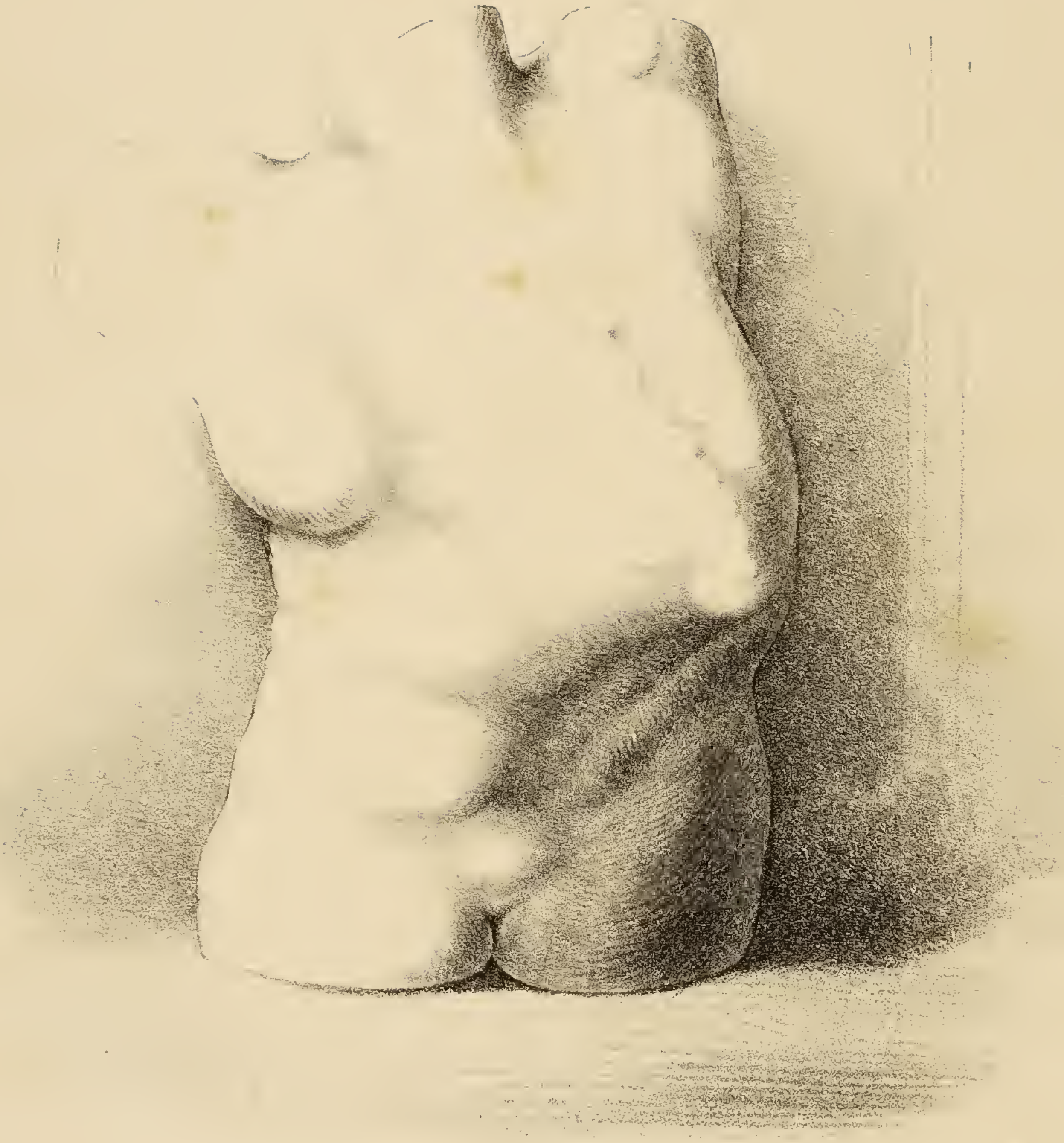
LONDON:
SHERWOOD & CO. 23, PATERNOSTER ROW; BAILLIERE, 219, REGENT ST.;
AND BY ORDER THROUGH ANY BOOKSELLER.

M.DCCC.XLIX.

12/6

WELLCOME
HISTORICAL
MEDICAL
LIBRARY

LONDON:
PRINTED BY JOHN TRAPP, BUDGE ROW, CITY.



Ford & George Lithographers

THE CASE NOMINATED BY THE QUEEN.

The case on the opposite page was admitted, by the command of Her Majesty, into Harrison's Spinal Institution, and in a few months the results will exhibit the efficacy of the treatment of spinal curvature detailed in these pages. Such results being realized, will go far towards obtaining, the Author believes, the patronage of Her Majesty to the Institution, which has received for many years the kind support of Her Royal Highness the Duchess of Kent.

PREFACE.

The great object in publishing a book should be to demonstrate, through its medium, something tending to the good of the human family: this cannot but be satisfactory; for although we may traverse the same ground which others have already traversed, there is work still left, and our labours, with such object in view, will never be unrewarded. Subjects like the one which we now take under consideration can be advantageously reiterated. We have to demonstrate that, the importance of which will at once be acknowledged; for sufficient evidence can be deduced from multiplied experiences to prove, that, in the whole category of physical misfortunes which afflict our race, none is more serious in its results than is that of spinal curvature.

Of so vast an interest is this subject, that, it might almost be advanced, few families—at least in this country, where so many of the habits and conventions of society form an antagonism against health and happiness, and where but a small number oppose conventions albeit inimical to themselves—few families, we say, it might be with little probability of contradiction asserted, are without an especial cause, of more or less interest, in this subject. How frequently, all must have observed, children at a very early age lose both the physical beauty of childhood, and the peculiar gaiety and buoyancy which ever characterize that period when attended by health, and become, so to speak, old men and women; perhaps in consequence of some fall, thought, at the time of its occurrence, to be a trifling circumstance, and left neglected, but which gave the spinal column a wrong bias at a time when such an injury is likely to become the beginning of effects felt afterwards for life. Young people, more particularly young females, whose occupations are very generally such as will probably induce a degree of unnatural curvature of the spine, are thence rendered unfit for the duties which await them, as well as for the higher enjoyments which unfold before them: they pine away, or suffer severe pains, are subject to frightful contortions, and become unable to use their limbs at all, or if at all, occasionally only, and with difficulty. Often, too, the brain is seriously affected from the same cause, inducing fits of a most distressing nature, delirium, imbecility. There is, perhaps, no source more fertile of brain affection than is this of the curved spine, for numerous ramifications of nerves and vessels from the spine spread themselves over the surface of the brain, as throughout the whole human structure, all of which must, by the displacing of the spine, be disturbed in their course, and modified in their action; and it will therefore be clearly seen that an important organ like the brain—of most exquisitely delicate texture moreover, soft and fibrous, and requiring a skilful piece of machinery for its protection, must be very materially affected by an interference of this kind. In fact, the spine being thrown out of its natural position, must necessarily press unduly on all the vital organs, or force them from their natural position; they are thus compressed, and incapacitated for performing their allotted functions, the performance of which functions with more or less precision is absolutely necessary to health. Persons in more mature life thus afflicted are, many of them, given up as incurables, with confirmed diseases called by a variety of names, and drag on a miserable, and to them and their friends hopeless existence: some imagining themselves victims of one disease, some of another, and others of a third, and so on, distressing themselves with violent internal remedies, and torturing outward applications, burnings, cuttings, and mechanical contrivances without end: all worse than useless while the cause of the evil is unknown, and the certain mode of cure unrecognized. We say worse than useless, for the constitution is considerably debilitated by the various medical agencies used, and thus the natural power of resistance is lessened.

In all these cases, through the admirable method, and assisted by the experiences of Dr. Harrison, whose attention was for many years devoted exclusively to this branch of the profession, certainty of cure is attainable, and that without having recourse to the torturing proceedings to which so many hundreds of our fellows have been submitted; but by entire recumbency of posture together with, and which is equally essential, skilful and judicious pressure applied in accordance with scientific principles; and followed by careful rubbings by persons engaged for the purpose. This is frequently a long and tedious process for the patient, undoubtedly; but how much less long and tedious and painful than other methods, those best can tell who have placed themselves under the treatment recommended by Dr. Harrison, after having adopted other methods. The length of time occupied in the attainment of cure, it must be evident, as it is reasonable, will vary with the age of the patient, and with the nature of the curve. Generally youth is the time most favourable for cure, the bones being then less hard, and all the ligaments more pliable and capable of yielding in the process. But frequently in youth, and even in childhood, very serious cases of curvature occur, with often also the distressing concomitant of a delicate constitution, and inability to hold out under the numerous evils resulting from the undue and unnatural pressure of the spine in wrong directions.

Acquaintance with the structure of the spinal column being essential both as respects prevention and cure, we have considered it desirable to present an exact picture of its entire economy; ignorance of which has doubtless been the cause of most of those evils which have resulted from what is termed curvature, a term by which we designate curves not in accordance with the perfect and natural form of the spine. For with a knowledge of the remarkable mechanism of the spine, and of the extreme delicacy, vast number, and specific duties of the various nerves and vessels leading from the spine to every part of the body, must necessarily be seen the great importance of preserving the same in its proper position; and the importance being thus perceived, parents will be enabled to prevent much evil: they will avoid, in dress, all undue pressure, setting themselves against bandages and stays, while both in the occupations and the sports of their children they will guard the spine with the utmost care. As little would those acquainted with the structure of the spine and its dependencies, allow a child or delicate young person to carry an infant, or any disproportioned weight, as they would commit on such child or delicate person any other cruelty. Equally small is the probability that, with such knowledge, the accomplishments of drawing and music would be allowed to overbalance the happiness arising from a healthy performance of the functions of the vital organs; and the same with respect to needle works, and other sedentary occupations. So in cases of accidents from falls or otherwise, immediate attention would be given to the spine; it would be watched with extreme interest, and serious curvature be avoided; while, should young persons themselves have their minds directed to this branch of study, hitherto almost wholly neglected, they would learn to respect the spine, and might guard it from many injuries. To all the knowledge is of advantage.

As we have deemed this picture of the spine essential, so, to disabuse the mind of errors, we have considered it advisable and even necessary to bring forward various modes of treatment which have been unsuccessfully resorted to; for between so many methods, each one of which, it is professed, is the true method, the mind must remain uncertain and vacillating, until well assured that the cause of non-success with respect to such methods, is, that they are not founded on the principles of science, and act in a direction contrary to nature; and that a cure effected by such means would be a violation of the order of nature, and more to be wondered at than want of success. Remedies to be effectual in cure must act harmoniously with nature, not in opposition to it: their application must be the result of successful experiences, and in conformity with fixed laws: thus only can they bear the test of sound reasoning. It is necessary only to bring forward to the light of superior intelligence the various modes of treatment of spinal curvature, to show that they will not bear this test, that they are not the result of such experiences, but the contrary, and are opposed to natural laws.

The propositions which we leave rather to be deduced from statements contained in the following pages, than seek elaborately to work out, are—

First, That man to enjoy the degree of health which he may reasonably expect, must have the spine precisely in that position which nature indicates that it should maintain, a proposition based upon the invariable antecedent and consequent of *spinal curvature*, and *diseased states.*

Secondly, That the curved spine being restored to such position, the diseased conditions disappear and health returns, other things being equal.

Thirdly, That science, as applied to such purpose by Dr. Harrison, gives a certain mode of restoring the curved spine to such position.

The cases which might be brought forward to prove that whenever the spine receives injury the health suffers as a consequence, would fill volumes: numerous also are the cases of perfect cure through the adoption of that mode of treatment which it is our object to commend. Some from among the more striking of these are presented, several of them treated by Dr. Harrison himself, and so remarkable and well attested as to carry conviction to every candid mind. These, therefore, we consider sufficient as illustrating the point advanced; and they perhaps require no further introductory comment.

GEORGE N. EPPS.

79, *Audley Square, May Fair,*
October 23*rd*, 1849.

CONTENTS.

Page

PREFACE vii

CHAPTER I.

A GENERAL OUTLINE OF THE SPINAL COLUMN AND ITS CONTENTS, AND OF THE PARTS IN RELATION THERETO.

SECTION I.—The bones of the spine. (Plates II. and III.) . . . 1

SECTION II.—The ligaments of the spine. (Plate IV.) 4

SECTION III.—The muscles. (Plate V.) 9

SECTION IV.—The nerves. (Plate VI.) 10

SECTION V.—The sympathetic system. (Plate VII*a.*) . . . 12

CHAPTER II.

ON THE INJURIES RESULTING FROM SPINAL CURVATURE.

The principal vessels, &c., as positioned immediately anterior and attached to the bodies of the vertebræ, viz. :—The ganglia of the sympathetic system ; the heart, and the large artery (aorta) ; the principal veins ; the spinal column ; the thoracic duct ; the œsophagus, or gullet ; the intestinal tube. (Plate VII.) . . 13

CHAPTER III.

ON THE VARIETIES, CAUSES, AND TREATMENT OF SPINAL CURVATURE.

SECTION I.—ON THE VARIETIES OF SPINAL CURVATURE.—The lateral curve, *frequent among females of rank* 17

The posterior or outward curve, or hump-back 18

The anterior or inward curve, its injurious effects upon the lungs, heart, rectum, bladder, and uterus 18

Sufferings the most formidable and distressing during the progress of child-birth . 18

Curvature in relation to single vertebræ 19

Page

Curvature causing lameness, unattended with malformation of the lower limb itself (Plate I.) . . . 19

Case of Mr. T., and another case of spinal curvature, which came under the author's care, in which, very absurdly, the tendo-achillis in *both* heels had been cut 19

Case, by Dr. Harrison, of a man who had fallen from his horse, and apparently "broke his neck" 20

In the prosecution of field sports, the mode adopted for killing wounded hares and rabbits 21

SECTION II.—THE VARIOUS THEORIES AND MODES OF TREATMENT OF SPINAL CURVATURE.—The theory of Glisson 21

The theory of Mayow 22

The muscular system—its fallacies 23

Spinal curvature may be produced in a person previously healthy . . 23

The Lancashire and Rotherham colliers 23

The Athenian rowers deformed in the shoulders . . . 24

The Thames watermen 24

The bargemen in the Queen's ships become "bible-back" . . 24

The vine-dressers of France (les vieux vignerons) . . . 24

Certain religious fanatics of the East 24

Long-continued playing upon the pianoforte 25

The opinion that muscular action can restore *ligaments* to their natural state disproved 26

The statement that muscular action restores a dislocated arm to its socket . 26

Muscular treatment inefficient:—First, In restoring the bones to their natural position; Second, In preserving them in that position, or as nearly as possible; Third, In giving the opportunity to the intervertebral substance to recover its natural shape, by removing pressure from it; Fourth, In allowing the ligamentous tissue enveloping the vertebral joints to recover its primitive shape: to be recovered only by its regaining its natural elasticity . 27

The theory of Pott, that in spinal curvature there is a "Morbid state of the *bony* column, and that no cure can be effected until the carious bones have begun to "incarn" 28

Pott's practice in accordance: Caustic issues: Professor Rust remarks, from numerous observations and experience, they frequently accelerate the progress of the disease 29

Page

Pott did not seek to effect a cure, his object being *merely to arrest the progress* of the caries, and, further, was content with a PERMANENT DEFORMITY . 29

Mr. Cheshire's plan; case illustrative of 30

This plan (with modifications) that adopted by most practitioners: its common result is pulmonary consumption 30

CHAPTER IV.

ON DR. HARRISON'S THEORY AND TREATMENT OF SPINAL CURVATURE.

SECTION I.—Dr. Harrison thought that the disease must be *wholly confined to the connecting ligaments of the vertebræ* 39

SECTION II.—THE THEORY UPON WHICH DR. HARRISON FOUNDED HIS PRACTICE . 39

SECTION III.—THE TREATMENT ADOPTED BY DR. HARRISON AS FOUNDED UPON HIS THEORY.—1st. The removal of all causes which could add to, or keep up the spinal curve or deformity. 2nd. The mechanical means, acting most efficiently in removing the curve or deformity. 3rd. The means to prevent a return of the curve or deformity 40

To realize these objects, the following is the treatment:—Horizontal recumbency; Extension; Friction; Pressure 41

CHAPTER V.

CASES ILLUSTRATIVE OF THE EFFICACY OF DR. HARRISON'S MODE OF TREATMENT.

CASE I.—M. T. Case of curvature of the dorso-lumbar region, of eleven years' standing, cured in a period of *only seven months*. (Plate VIII.) . 43

CASE II.—Miss D. J. Case of lateral curvature, progressing towards the second stage of consumption, cured 45

CASE III.—A case of inequality of the lower limbs, dependent on spinal curvature, cured by removing the curve 47

CASE IV.—Miss M. H. A case of a paraplegic patient, who had lost the entire use of her lower extremities, cured 48

CASE V.—The Rev. Mr. —— Case of paralysis of the arms and the legs, dependent on spinal curve, removed by removing the curve . . . 49

Dr. Hoffman's admirable reply to a friend, who was in search of a medical adviser 49

Page
Case VI.—Miss D. Case of spinal curvature affecting the respiratory, digestive, and uterine system, cured, with disappearance of the symptoms . . . 50
Case VII.—Miss W. Case of spinal curvature, attended with cough, cured . 51
Case VIII.—Case of spinal curvature, causing coldness of the legs, cured, and the coldness ceasing 52
Case IX.—Mr. C. D. Case of outward curvature, attended with affection of the heart and affection of the sight, cured 52
Case X.—Master G. A. Case of outward curvature, attended with shortness of the left leg, cured. (Plate X.) 54
Case XI.—Mrs. A. B. Case of lateral and outward curvature, cured . . 57
Case XII.—Mrs. W. Case of outward and lateral curvature, with loss of power in the lower limbs, and partial loss in the upper, cured . . . 60
Case XIII.—Miss E. F. Case of outward curvature, attended with some extraordinary symptoms, cured 63
Case XIV.—Miss R. Case of outward curvature, attended with many distressing symptoms, cured. (Plate XI.) 68
Case XV.—Miss P. Case of outward curvature, attended with palpitation, difficulty of breathing, tightness of chest, hysteria, and other anomalous symptoms . 72
Case XVI.—Miss M. D. Case of spinal affection, attended with affections of the pulmonary and digestive organs, cured 73
Case XVII.—Master T. C. Case of partial palsy, affecting the right leg, cured by correcting the lumbar spinal curvature 74
Case XVIII.—Miss H. Case of lateral and outward curvature . . . 77
Case XIX.—Miss M. H. Case of curvature of the spine, with one limb shorter than the other, and attended with the loss of the power of using the lower limbs, cured 78
Case XX.—Miss S. S. T. Case of outward curvature, cured. (Plate XII.) . . 79
Case XXI.—The case of Sarah Hawkes. (Plates XIII. and XIV.) . . 82
Case XXII.—Miss J. R. Case of double lateral and posterior curvature, cured. (Plate IX.) 90
Directions for patients 91

PLATE I

Fig. [illegible]

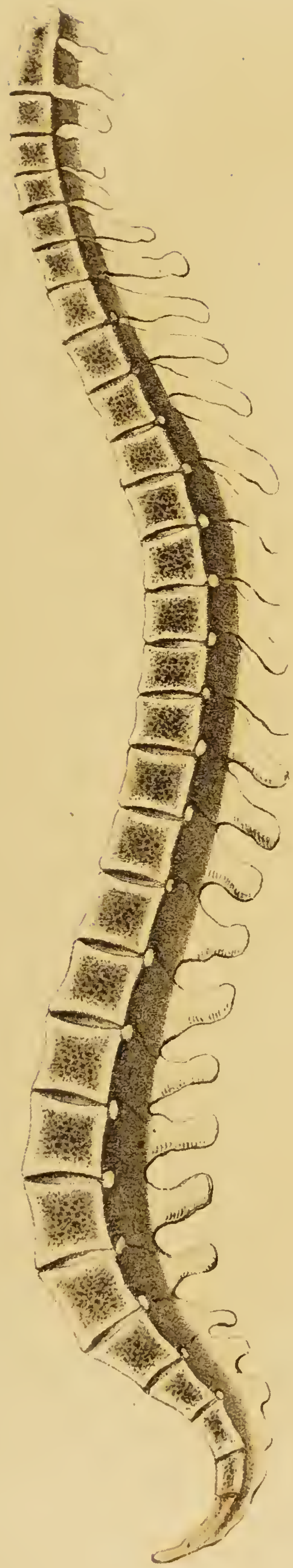


Fig. [illegible]

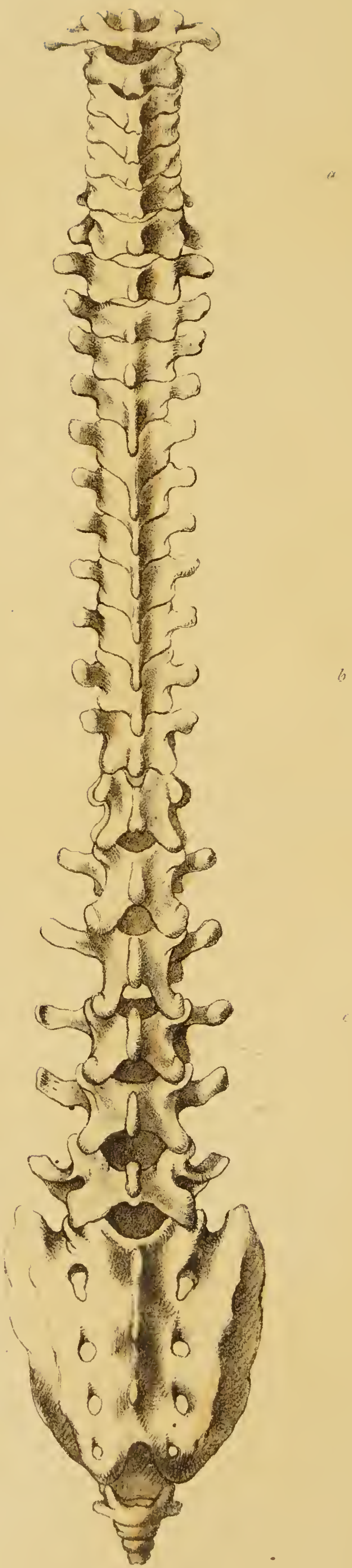


Fig. [illegible]

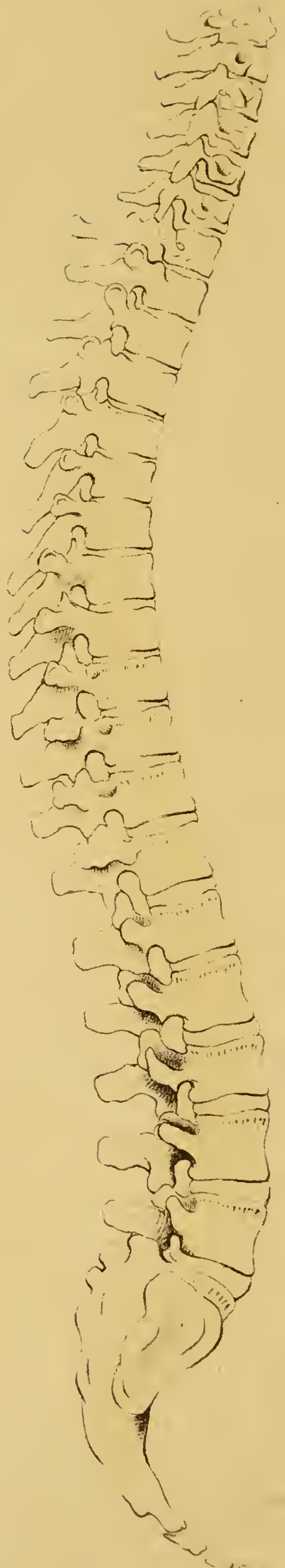


Fig 1

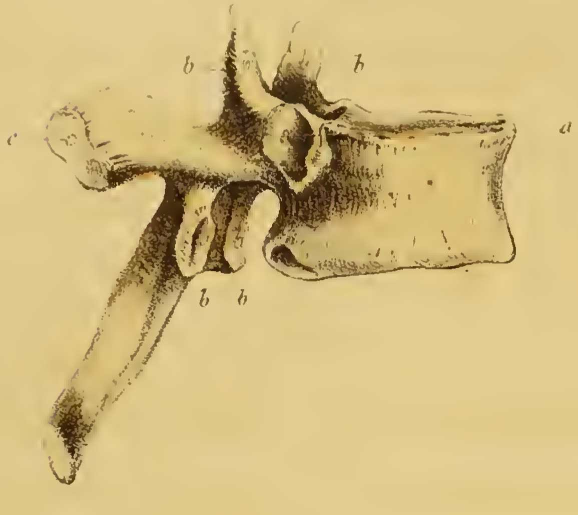


Fig 2

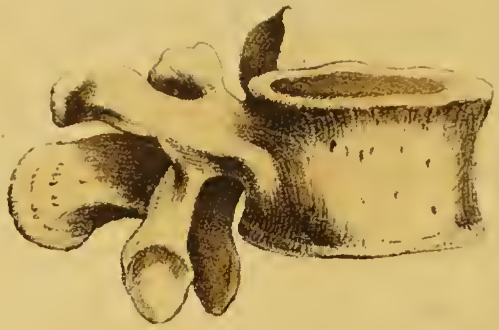


Fig 3

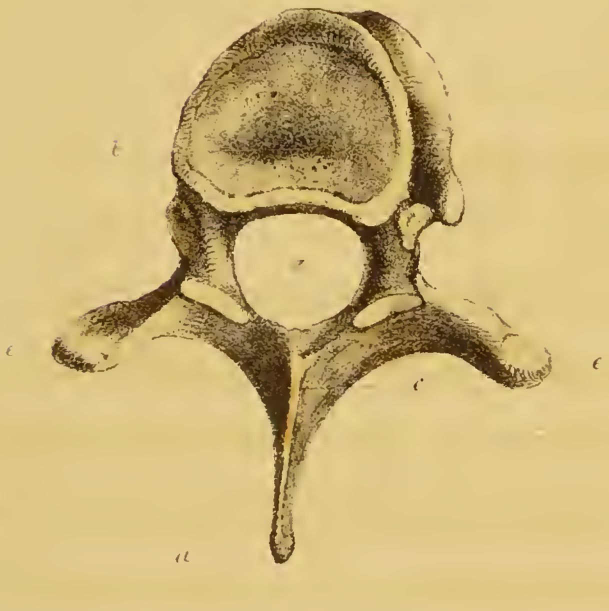


Fig 4

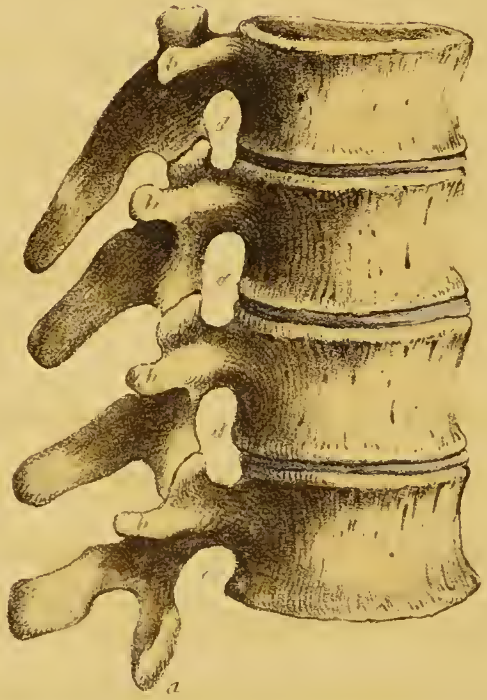


Fig 5

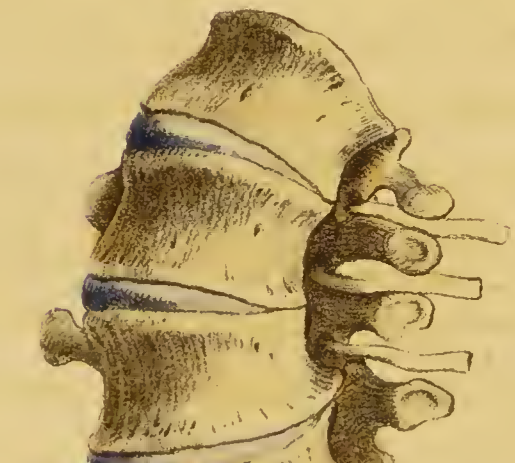
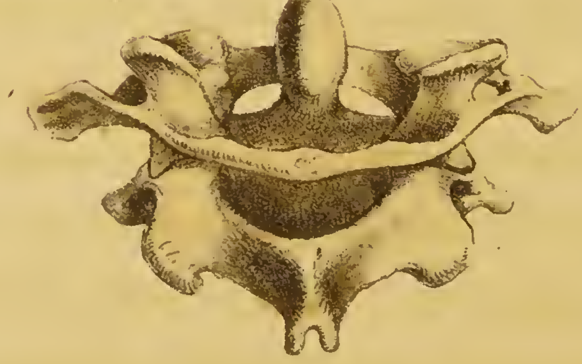


Fig 6



CHAPTER I.

A GENERAL OUTLINE OF THE SPINAL COLUMN AND ITS CONTENTS, AND OF THE PARTS IN RELATION THERETO.

SECTION I.

THE BONES OF THE SPINE.

The spinal column may be considered as the centre or fundamental part of the whole bony or osseous system of man. It supports on its upper extremity the *skull;* progressing downwards, the *ribs;* which latter in union with the *sternum*, or breast-bone, (to which the ribs are joined in front,) form an arch, in the hollow of which are placed the organs of respiration and circulation. The spinal column further, by means of muscular and ligamentous attachments on the external surface of the ribs, supports the *superior extremities*, or the arms; while, at the lower extremity of this column, will be found that junction of bones, called the *pelvis*, to which are attached the *lower extremities*, or the legs.

The spinal column or back-bone of man, is composed of twenty-four distinct parts, called *vertebræ*, (plate 2,) each vertebra being kept in position by strong ligaments. Some of these ligaments, as will be hereafter illustrated, pass simply from vertebra to vertebra, while others extend the entire length of the spinal column, having attachments to each vertebra.

A vertebra, (plate 3,) presents several parts: a *foramen* or *hole*, (plate 3, fig. 3 *a*). The holes of the twenty-four vertebræ with the hole of the sacrum form one continuous tube, called the *spinal canal*, (plate 2, fig. 3*aa*). The foramen (foramen magnum,) for explanatory arrangement, may be called the centre of a vertebra. In front of this central hole is placed a mass of bone called the *body*, (plate 3, fig. 3 *b.*) the first vertebra alone (plate 3, fig. 5 *a.*) not having a body: at *each* side of this central hole is placed a *plate* of bone, which plates meeting posteriorly, form what is called the *arch* of the vertebra, (plate 3, fig. 3 *c.*); and at the junction posteriorly of these plates to form the arch, a projection or *process* of bone, called the *spinous* process, is given off, (plate 3, fig. 3 *d.*) which spines being in the whole collection of vertebræ arranged perpendicularly, cause the column formed by the juxta position of these bones, to be called the SPINAL COLUMN, (plate 2, figs. 1, 2, 3.)

To repeat, the ring or hole is formed, at its anterior side, by the body; at its lateral sides, by the plates; which two plates meeting posteriorly form the arch, from which arch the spinous process is given off.

A more minute examination of plate 3, fig. 1, will show, at the junction of the body and lateral plates of the vertebra on its superior and inferior margins, four projections of bone, (*b b b b.*) named (as all these projections are) *processes*, and further characterized as *oblique*, from their oblique direction, one on either side at the upper margin, and one on either side at the lower margin, making in the whole, four: the upper for articulations with the vertebra above, and the lower for articulations with the vertebra below. On examining the external surface of these lateral plates, (plate 3, fig. 4,) two additional processes (*b b b b.*) are found, *(transverse,)* which transverse processes in the dorsal region are for the articulation of the tubercles of the ribs, (plate 3, fig. 1 *c.*)

In plate 3, fig. 4 *c c.* a *notch* is visible between the body of the vertebra and the oblique process, and in plate 3, fig. 4 *d.* a *hole* is perceptible, being formed by the juxta position of two vertebræ, the upper notch of the lower vertebra uniting with the lower notch of the upper vertebra: an *inter*-vertebral foramen is thus formed between every two vertebræ. Through these several foramina the NERVES, given off from the spinal cord throughout its entire length, pass out. (Plate 6*d.*)

From this description it must appear that any slight deviation in the arrangement of the bones of the spine may, by disarranging the proper apposition of the notches, produce pressure upon the nerve in its passage from the spinal cord to the part which it supplies. The effect of such deviation is seen in plate 3, fig. 6 *a a a*. Pressure on nerves, according to its degree, produces weakness, wasting, or total palsy of the part to which the nerve gives, when unimpeded in its action, the power necessary for the performance of its functions.

The twenty-four vertebræ are arranged by anatomists, for convenience of description, into three classes, (plate 2, fig. 1,) viz. the *cervical*, (*a.*) i. e. the neck vertebræ, seven in number; the *dorsal*, (*b.*) i. e. the rib vertebræ, twelve in number, to which are attached the ribs; and the *lumbar*, (*c.*) i. e. the loins vertebræ, five in number.

Each class of vertebræ presents to the anatomist many distinguishing points. In the vertebræ of the upper part of the vertebral column the foramen magnum, or central hole, is much larger relatively than in the vertebræ of the lower part of the column: an arrangement allowing the head and the neck to have a greater extent of rotation than otherwise would be admissible without producing pressure on the delicate tenant of the column, the spinal cord.

The dorsal vertebræ (plate 2, fig. 1 *b.*) having to support the weight of the whole of the upper part of the body, and, to a great extent, the contents of the chest, are more stróngly formed, having larger bodies; but, not having so great a rotatory motion, the foramen is smaller. These vertebræ have, as already hinted, articulating surfaces on their bodies, (plate 3, fig. 1 *a.*) and likewise on their transverse processes, (*c.*) with both of which the ribs articulate. Progressing further downwards to the lumbar vertebræ, (plate 2, fig. 1 *c.*) the bodies are still further enlarged, and the foramen magnum again becomes larger, a greater extent of rotatory motion being required in this region.

Such, in relation to the subject of this work, are the bones of the spinal column.

SECTION II.

THE LIGAMENTS.

The vertebræ are held together and retained in position by LIGAMENTS, aided by a peculiar substance or cushion, styled fibro-cartilage, being partly fibrous and partly cartilaginous.

Some of these spinal ligaments have in connexion with them peculiar membranes or oil bags, secreting an oily viscid fluid termed *synovia*, the membranes themselves being hence termed synovial.

Synovial membranes are met with in all joints, and also where tendons in moving, move over an angular surface, and consequently cause friction.

The ligaments of the spine are

1st. The anterior common ligament.
2nd. The posterior common ligament.
3rd. The inter-vertebral substance.
4th. The articulating processes ligaments.
5th. The ligmenta subflava (yellowish).
6th. The supra-spinous ligament.
7th. The inter-spinous ligament.
8th. The inter-transverse ligaments.
9th. The ribs articulation ligaments with the spinal column.
10th. The ligaments of peculiar articulation to individual vertebræ.

1st.—The anterior common ligament, (plate 4, fig 5 *a.*) consists of a strong band of fibres, extending the entire length of the spinal column, on its anterior surface from the second vertebra, termed *axis*, being the axis on which the head by means of the

Fig 1

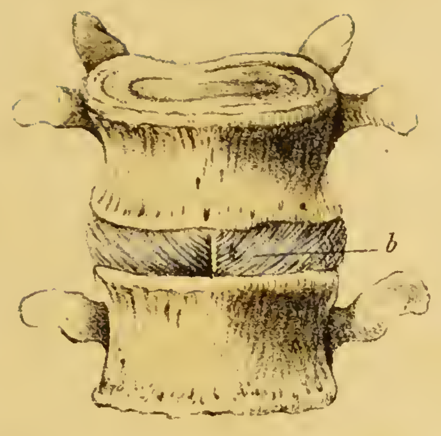


Fig 2

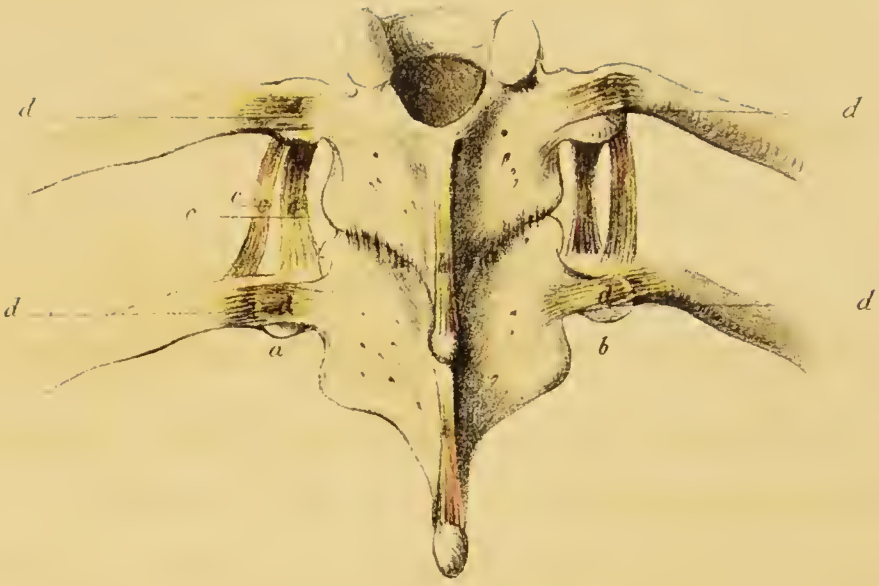


Fig 3

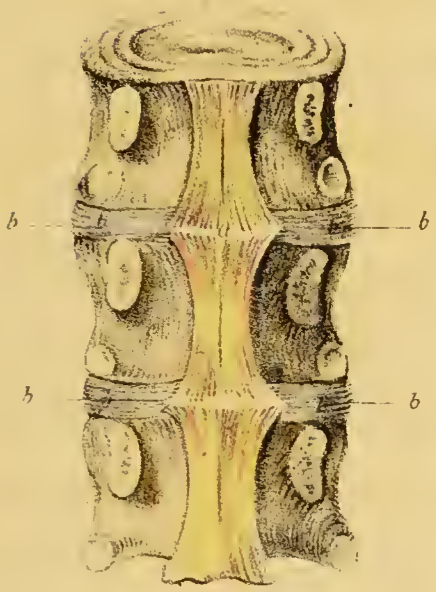


Fig 4

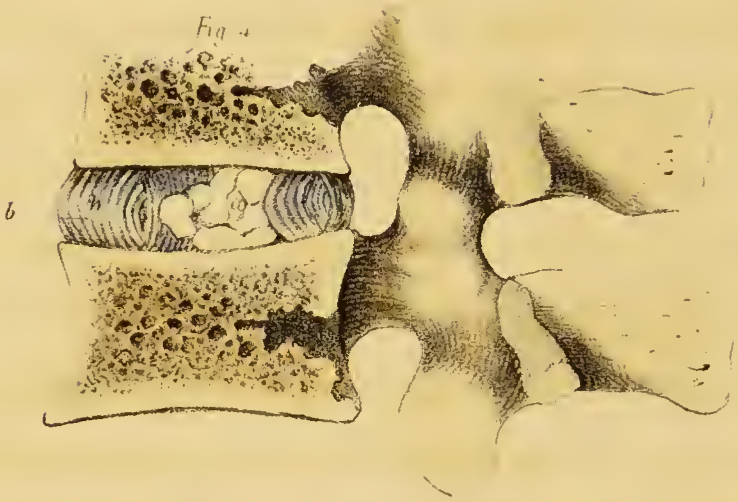


Fig 5

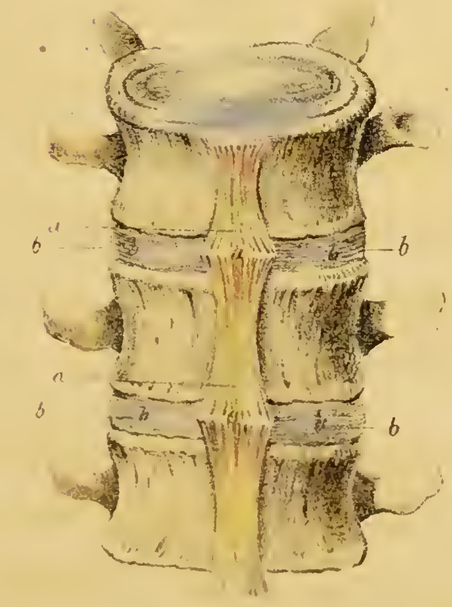


Fig 6

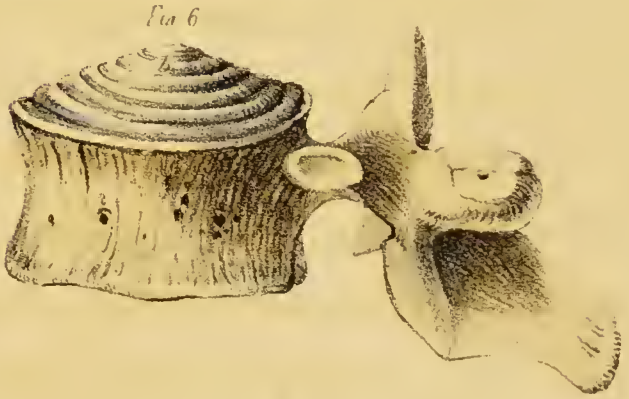
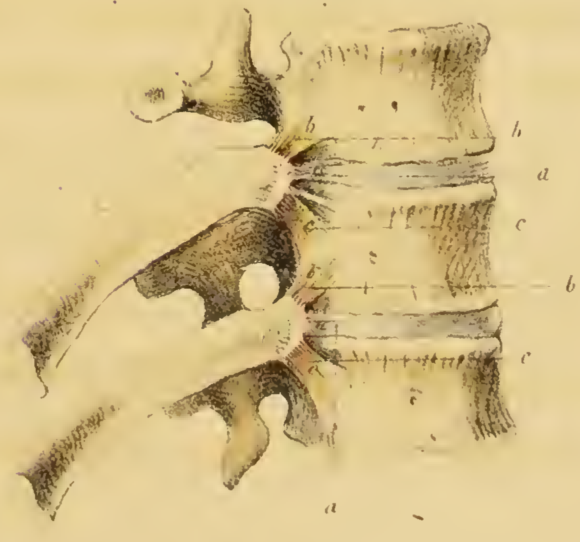


Fig 7



first vertebra rotates (plate 2, fig. 2*a.*) to the first bone of the sacrum, (plate 2, fig. 2*b.*) This ligament consists of longitudinal fibres, dense, firm, and well marked, the external fibres extending from a given vertebra to the fourth or fifth vertebra below it; the next layer, extending from a given vertebra to about the third below it; and the sub-layer of all, extending from one given vertebra to its neighbour.

2nd.—The posterior common ligament, (plate 4, fig. 3*a.*) is situated on the posterior surface of the bodies of the vertebræ anterior to the spinal cord in the spinal canal; adherent to a greater extent laterally to the inter-vertebral substance (*b b.*) than to the bodies of the vertebræ, (*c c c.*)

3rd.—The inter-vertebral substance, (plate 4, figs. 1, 3, 4*b.*) is situated between each pair of vertebræ, from the second vertebra to the base of the sacrum, and is attached anteriorly to the anterior common ligament, (fig. 5*a.*) posteriorly to the posterior common ligament, (fig. 3*a.*) and in the dorsal region it has ligamentous attachments with the heads of all the ribs. Eight of the twelve ribs, it may be repeated, articulate each with the bodies of *two* vertebræ, (plate 4, fig. 7.) Of the other four, the first rib has a single articulating surface with the first dorsal vertebra, the tenth rib has a single articulating surface with the tenth dorsal vertebra, the eleventh rib has a single articulating surface with the eleventh dorsal vertebra, and the twelfth rib has a single articulating surface with the twelfth dorsal vertebra.

The inter-vertebral substance or cushion is composed towards its circumference of thin plates of fibro-cartilage, resting on their edges, and placed one within the other, as it were, concentrically, (plate 4, fig. 1 *b.*) Thus the outer plate like a rim runs round the disc, its lower edge resting on the vertebra beneath it; its anterior or convex surface being subjacent to the anterior common ligament, whilst its concave surface is in opposition with and connected by some fibres to the plate next within it. The plates are not vertical in their direction, (plate 4, fig. 1 *b.*) On making a vertical section of a disc it will be seen, that a certain number of those plates nearest to the circumference curve outward, while others situated more inwards curve inward, (plate 4, fig. 4 *b*). The former are more compacted together when the spine is bent in any direction, the curves formed by the different layers are augmented on the side towards which the column is inclined.

The interstices between the plates are filled up by a pulpy and apparently elastic substance; and as the number of plates gradually decrease towards the centre, whilst the pulpy matter increases, the quantity of the latter is such, that, when the pressure which confines it is taken off, by cutting through the external part of the inter-vertebral substance, it will rise so as to assume a conical form. (Plate 4, fig. 6 *b*.)

Upon a more minute examination of the layers forming the plates of the inter-vertebral substance singly, they are found to consist, for the most part, of fibres extending obliquely between the vertebræ, into both of which they are firmly fixed; and the direction of the fibres varies from layer to layer, in one being from right to left, and the next the reverse; some fibres are found nearly horizontal. (Plate 4, fig. 4 *b*).

Such is the provision of nature with reference to the laminæ or the plates of the intervertebral substance; the external plates being directed outwards, and the inner plates inwards, forming together a circle. Further in the centre of this circle is placed the pulpy or elastic substance, (plate 4, fig. 4 *a* & fig. 6 *b*) serving, like buffers to railway carriages, to qualify the shock arising from any sudden pressure of the vertebræ when coming together. Take an example: suppose a person has another step to go down when under the impression of being at the bottom of the stairs, in the action, the heel will come in contact with the ground sooner than the toes, and consequently the shock will be great to the system. Again, when jumping down, if possessed of forethought, we come upon our toes, slightly bending all our joints, ankles, knees, &c. to relieve the inter-vertebral substance, and by consequence the spinal column, of a portion of the force to which it would be subjected.

When in the upright position, a greater amount of direct pressure being on the spinal column, then it is that the pulpy elastic substance has the greater amount of duty to perform in the way of resistance. The inter-vertebral substance forms nearly a fourth of the whole moveable column, and of this total the cervical and the lumbar regions have the greater amount, exhibiting another wise provision of nature, since those portions of the spinal column, the cervical and the lumbar, have the greater amount of freedom of action, both with reference to the angular motion of bending and the circular motion of rotation.

In the cervical and in the lumbar regions the inter-vertebral substance varies with the curves in the spine itself; thus, in the cervical region the *anterior* portion of the inter-vertebral substance is the thickest, and in the lumbar, the reverse is the case.

It will be useful here to recapitulate the various provisions of nature with reference to this grand centre of muscular action.

1st. The cushions, interposed between the vertebræ.

2nd. The elasticity of these cushions.

3rd. The cushions are thickest where the greatest moveability is required.

4th. The spinal column, though perpendicular, is not in a straight line, but consists of curves, from back to front, (plate 2, fig. 2.) nature carrying out her law in the animal kingdom, as in the vegetable kingdom, of forming spirals or sections of spirals, viz. curves, exhibited in most creeping plants, the common convolvulus major for instance.

5th. Those sides of the curves having the greatest amount of pressure have the thickest portion of inter-vertebral substance.

The processes of the vertebræ having an action one on the other, the surfaces that exercise this motion are called articulating, and are kept firm in their position by ligaments. The ligaments of the *articulating processes* are fibrous bands, outside the synovial membranes or oil bags.

The *yellow ligaments*, or *ligamenta subflava*, (plate 4, fig. 2 *a.*) These ligaments, consisting of yellow elastic fibres, are placed on the arches or plates of the vertebræ, extending laterally to the bodies of the vertebræ and the roots of the transverse processes, filling up the interspaces between the arches, being attached thereto. It is a ligament of this kind, which, in the lower animals, who carry their heads down, is observed in the neck part of beef and mutton, being in general nomenclature termed "pack-wax;" by anatomists, ligamentum nuchæ.

The *supra-spinous*, (plate 4, fig. 2 *b.*) the *inter-spinous* and *inter-transverse ligaments*, (*c*). The first and second connect the spinous processes.

The *articulations* and *ligaments* of the *ribs* to the *spinal column.* Plate 4, fig. 7 *a b c.* exhibits the rib articulating with two vertebræ.

The ligaments connecting the ribs and the vertebræ are twofold, those which connect the ribs with the bodies of the vertebræ, (plate 4, fig. 7 *a b c.*) and those which connect the tuberosity of the rib with the transverse processes of the vertebræ, (plate 4, fig. 2 *d.*) These ligaments are the

Costo-vertebral, so called on account of their joining the ribs (costæ) to the vertebræ.

Costo-transverse, joining the ribs to the transverse processes.

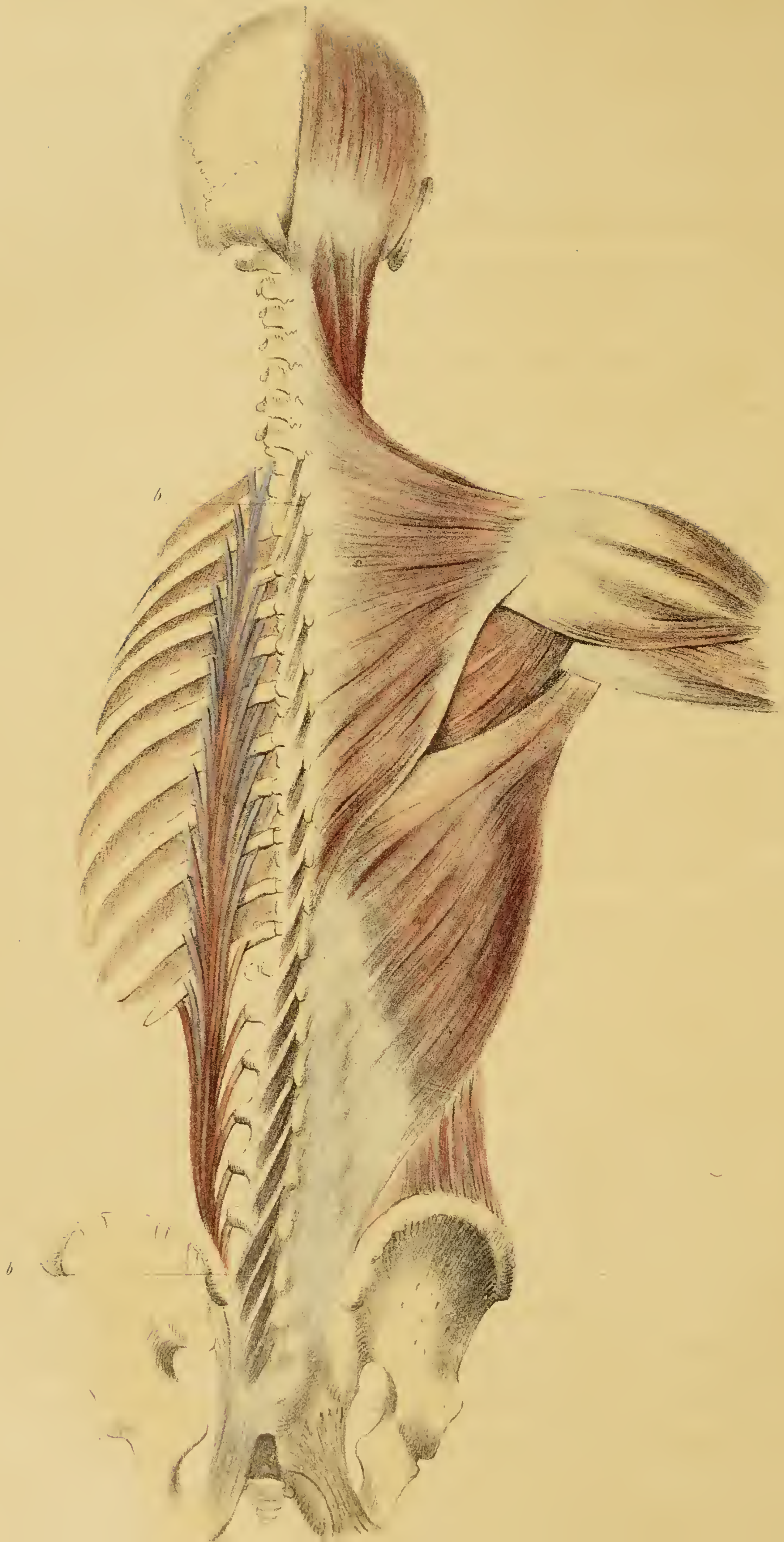
Posterior costo-transverse.

Inter osseous costo-transverse; and anterior costo-transverse ligaments.

Of these, the costo-vertebral is worthy of particular notice: each ligament radiates into three special attachments, (plate 4, fig. 7.) viz. the middle portion (*a.*) to the inter-vertebral substance, the superior portion (*b.*) to the vertebra above, and the inferior portion (*c.*) to the vertebra below.

The detail thus given of these various ligaments will be deprived of its tediousness by associating therewith the fact, that, as these ligaments are for the purpose of retaining the bones of the spine in their places, so as to allow the requisite motions and to prevent any misplacements in these motions, a knowledge of their uses must be of importance, as demonstrating how much health depends upon the healthy condition of the tissues of which these ligaments are made.

As a practical deduction from this description of these ligaments, taken in


b
b

connexion with the ribs and their union to the vertebræ, it will be seen that one misplaced vertebra may be the cause of the misplacement of two or even four ribs, which ribs, as already described, form part of the boundary of the chest, and these being displaced may press injuriously upon some one or more of the most vital organs, for the protection of which they were contrived.

SECTION III.

THE MUSCLES.

The structures already described have no power of motion in themselves: they consist of apparatusses for motion, and apparatusses to keep the parts in their proper relative position when moved. To effect the motion, thread fibres, endowed with the power of contraction and relaxation, are required; such threads are the fleshy fibres, forming the muscles, which are bundles of these fibres, and being arranged into separate sheaths may be separated one from another, and have, on account of the different arrangements of these fibres, different ranges of action. Though extremely complex, sufficient clearness of idea as to the action of the muscular structure of the back, may be obtained from the diagram, (plate 5 *a.*) showing the more superficial layers of the muscles, and (*b*,) presenting the deep layers.

When it is considered that all these muscles exercise a power on the movements of the back-bone, and of the limbs connected therewith, it can be readily seen, that, in order to understand the effects of spinal curvature, with its production and cure, it is necessary to have some idea of the action of these muscles; and such understanding will establish the injuriousness of any unduly long continued muscular exercise.

SECTION IV.

THE NERVES.

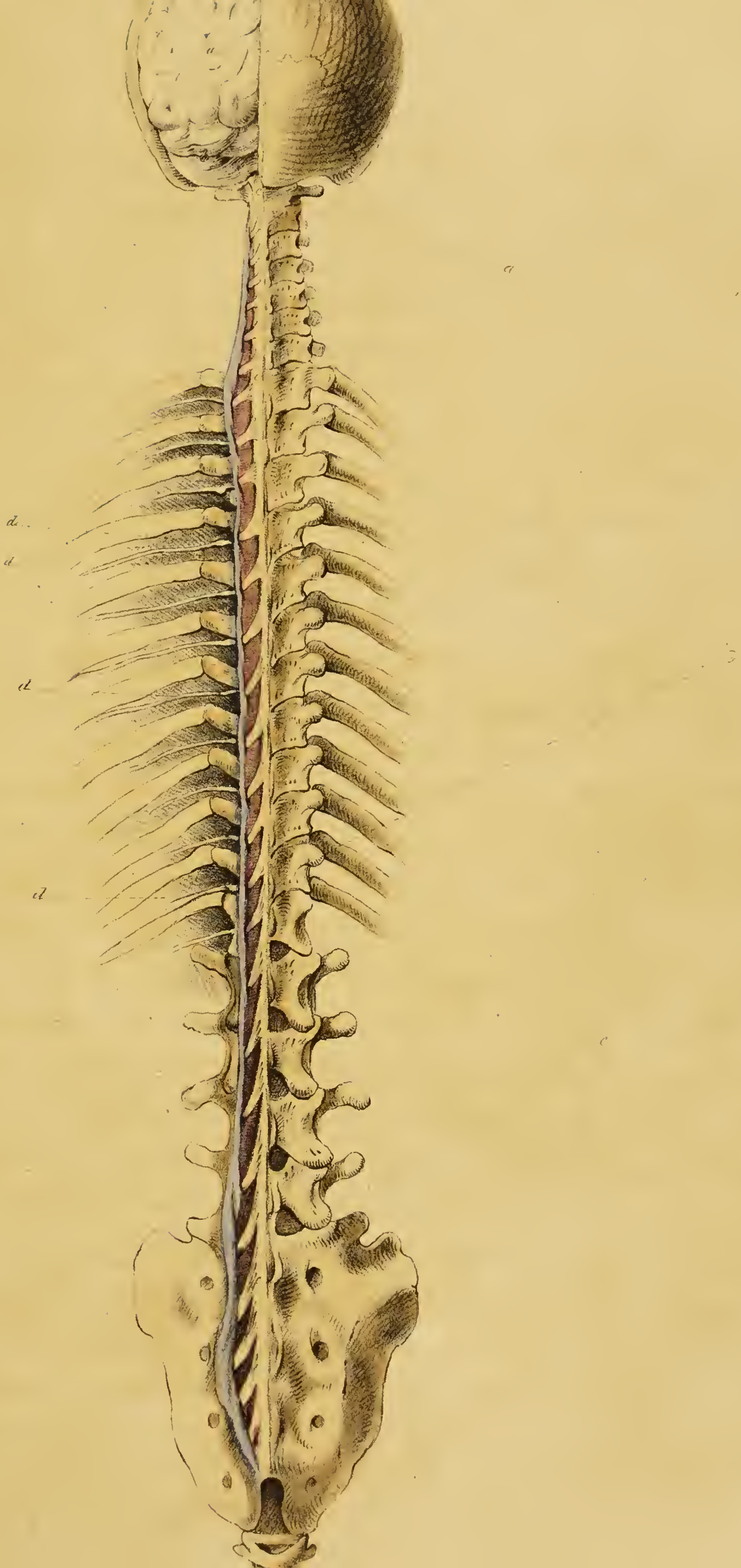
The centre of the NERVOUS SYSTEM consists of the CEREBRUM, (brain, plate 6 *a.*) the CEREBELLUM, (*little* brain, *b*), the MEDULLA SPINALIS, (spinal cord, *c*), and of the several nervous centres, (called GANGLIA), of the Sympathetic system, (plate 7 *a*).

The brain, (cerebrum,) and little brain, (cerebellum,) are positioned in or occupy the skull; the spinal cord is situated in the spinal column; and the sympathetic system, on each side of the spinal column, consisting of ganglionic centres and their nerves, passing from ganglia to ganglia into the several cavities of the skull, chest, and abdomen.

The spinal column contains the spinal cord, the roots of the spinal nerves, and their membranes. Between the investing membrane and the spinal cord is a serous fluid, which keeps up an equalized gentle pressure upon its entire surface, (the brain has a corresponding fluid-pressure,) and yields with the greatest facility to the movements of the cord; giving to those delicate structures the advantage of the principle so usefully applied by Dr. Arnott in the hydrostatic bed.

The spinal cord varies in thickness, presenting three enlargements. The uppermost is the medulla oblongata; the second, where the origin of the nerves that go to the arms, &c. are given off; and the lowest, whence the nerves to the legs, &c. are given off.

The SPINAL NERVES number thirty-one pairs, each arising by two roots, an anterior or motor root, and a posterior or sensitive root. These two roots after uniting form a ganglion, (plate 6 *d.*) and constitute a spinal nerve, which passes through the inter-vertebral foramen, and then divides into an anterior and a posterior branch; the anterior to supply the anterior half of the body, and the posterior to supply the posterior half of the body. The anterior branches, with


a
a
d
d
b
d
d
c

the exception of the two first cervical nerves, are larger than the posterior, being proportioned to the extent of surface they are required to supply.

The spinal nerves are classed in the same order as the various regions of the vertebral column, into the

Cervical region, .	8 pairs	Lumbar, . .	5 pairs, and the
Dorsal, . . .	12 pairs	Sacral, . . .	6 pairs.

The reason that there are eight cervical nerves and but seven cervical vertebræ is, that the first pair of nerves (sub-occipital) passes out between the occipital bone of the skull and the atlas or first cervical vertebra.

The nerves of the cervical region pass principally to the upper extremities; the nerves of the dorsal region, to the trunk; and the nerves of the lumbar region, and the sacral region, to the contents of the pelvis, (bladder, rectum, uterus, &c.) and to the lower extremities. The sympathetic system receives branches from all these nerves throughout its entire length.

Such distribution being understood, no difficulty will exist in perceiving, that, should a dislocation of sufficient magnitude of the vertebræ of the lumbar region take place, paralysis of the legs, retention of urine, and the want of command over the action of the bowels, must follow. It will further appear, that, in a case of dislocation of the vertebræ of the cervical region, paralysis of the upper extremities will occur, the action of the lungs and of the heart* will be suspended, and death result.

---

* The heart may be viewed as consisting of two distinct halves, each half having two compartments, viz. the left half for transmitting arterial, or pure blood; and the right half for transmitting venous, or impure blood.

The blood, having been purified by the action of the lungs, passes from them to the left side of the heart, from which it progresses, first through the aorta, then through the various other smaller arteries, and ultimately through the capillaries (from capillus, a hair) over the whole system. It is then returned as impure blood, being received by the various veins, which finally empty themselves into the two principal veins, the ascending vein, and the descending vein. These carry the blood to the right side of the heart, by which it is forced (by the muscular contraction of the heart,) into the lungs for purification, this purification being effected by coming in contact with the air, or, at least, by being acted on by it through the medium of an extremely thin membrane. Thence the blood again passes to the left side of the heart to be again re-distributed over the whole system, and so the repetition continues during the natural existence of man.

In such a case the fatal result takes place in connexion with the following phenomena: 1st. The lungs ceased acting immediately on the dislocation: 2ndly. That, in consequence of this cessation of the lungs' action, impure blood is returned to the heart: 3rdly. The heart passes impure blood over the nervous centre, the brain: 4thly. The brain thus receiving impure blood, ceases its allotted action; and ultimately the heart, losing its nervous energy, ceases to act.

From the above it may be deduced, that in exact ratio to the degree of derangement of the spinal column will be the amount of the want of power evidenced, and of the other injuries resulting.

SECTION V.

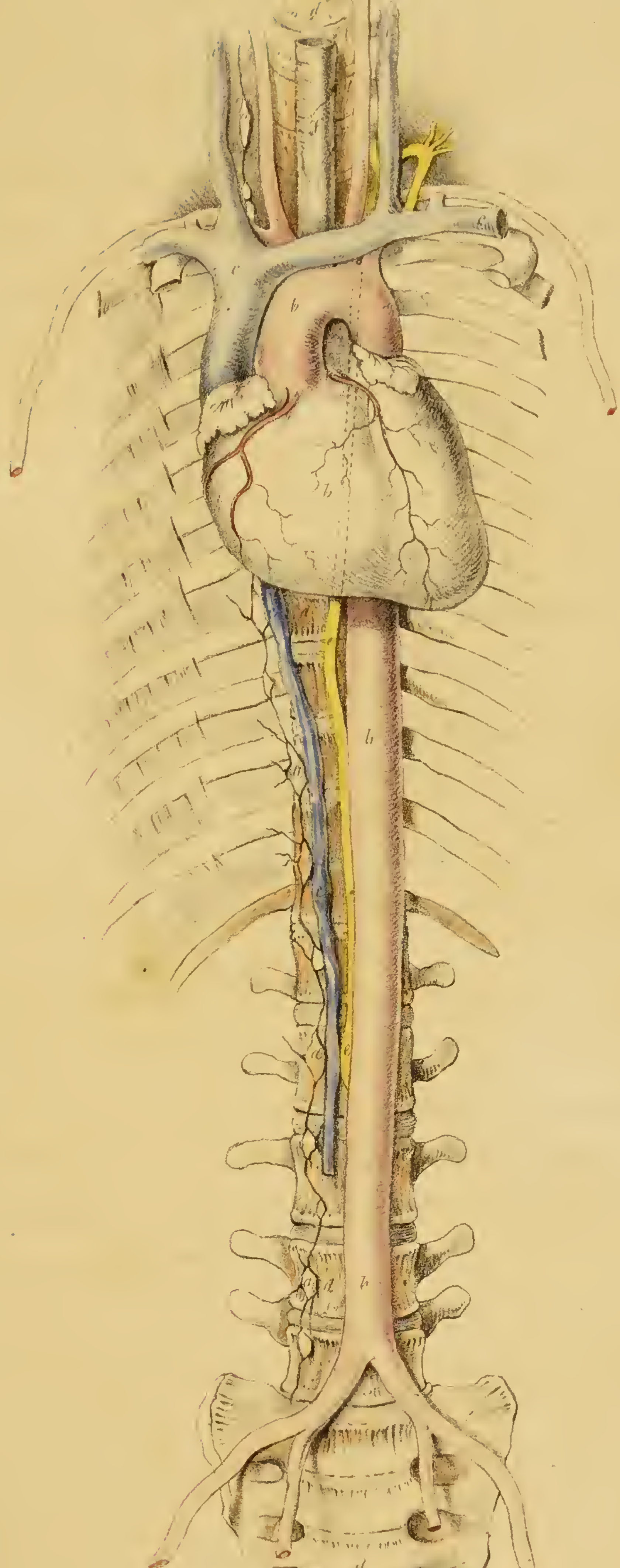
THE SYMPATHETIC SYSTEM.

The SYMPATHETIC system (plate 7 *a.*) consists of a series of ganglia, extending along EACH SIDE OF THE VERTEBRAL COLUMN from the skull to the last bone of the spinal column called the coccyx, *communicating with all the other nerves of the body, and distributing branches to all the internal organs.* Some of the internal organs of the head, neck, and trunk, are supplied exclusively by branches of this nervous system, and from this exclusive character the sympathetic nerve *is considered a nerve of* ORGANIC LIFE.

The nervous system with its numerous centres of ganglia, receiving branches from the several spinal nerves, leaves room for the conclusion, that curvature even at the lower part of the column, might be the cause of pain, not merely at the part itself, but at other parts of the system, even the brain,* in fact any part to which the sympathetic sends branches.

---

* The pia mater, (the nutrient membrane of the brain,) is entirely supplied by the minute filaments of the sympathetic.


b
c
b
b
d
e
b
d
e
b
d

CHAPTER II.

ON THE INJURIES RESULTING FROM SPINAL CURVATURE.

Having given a general outline of the anatomy of the spinal column, of the bones forming it, of the ligaments holding the bones in position, of the muscles more immediately connected to the spinal column, of the spinal cord passing through its entire length, of the foramina through which the nerves pass from the spinal cord to the various parts of the body, and of the sympathetic system, it will be well to add to this outline by referring the reader to the accompanying plate, which exhibits the principal vessels, &c. as positioned immediately anteriorly and attached to the bodies of the vertebræ, (plate 7).

a The ganglia of the sympathetic system.
b The heart, and the large artery (aorta).
c The principal veins.
d The spinal column.
e The thoracic duct.
f The œsophagus, or gullet.

From this drawing will be seen the principal organs in connexion with the spinal column, viz. the tube (œsophagus) which conveys the food from the mouth to the stomach; the heart; the principal artery; the principal veins; the thoracic duct, conveyer of the nutriment derived from the food to the blood; the kidneys; and, although last in the enumeration, perhaps the most important, the sympathetic nerve and its various centres, (ganglia,) the connecting nervous media passing along on either side of the spinal column.

A little consideration of the relations of all these parts (and there are other parts, such as the intestinal tube, which are not exhibited in the drawing,) to the spine, will be sufficient to show that a greater extent of complicated sufferings arise from the derangement of the spinal column, than from that of any other organ: it affords support to the head, ribs, arms, and internal viscera; numerous nerves issue from its cavity, to be distributed over the skull, trunk, and limbs; others pass to the internal structures, regulating their vital functions.

The preceding anatomical description of the spinal column, and the parts in connexion, demonstrates that the vertebræ are each supplied with distinct articulations, independent of the jointed structure of the vertebral plates and spinous processes. A machine, thus formed, of so many parts, and being connected with so many important organs, will, like all complicated machines, be the more liable to casualties in the fulfilment of the ends for which it was made.

It will be further evident that complaints, originating in the spinal column, usually exhibit a great diversity of symptoms, and must modify the condition of so many organs of the body, that no medical man can act up to the duties of his profession unless he carefully considers the subject of spinal diseases, and clearly ascertains what symptoms are referrible thereto.

Suppose a patient to be afflicted with a large spinal curvature *between the shoulders*, either backwards, sideways, or forwards, much inconvenience will necessarily result at all times, even from the mere mechanical derangement; and his constitution will be less able to resist the attacks of disease, to which it may be exposed in life's progress.

To illustrate a little more fully. In such a case the vessels, attached to the fore part of the vertebræ, from the mechanical impediment to the free circulation of the fluids passing through them, will become distended with the enclosed fluids. The coats of these vessels will gradually give way to the pressure of these fluids, and lay the foundation of aneurisms in the arteries, and varicose enlargements in the veins. The circulating mass, impeded in its approach to and departure from the heart and the lungs, will have to encounter additional difficulties in its passage through them. In consequence of displacement, the walls of the chest themselves will be unduly approximated in the contracted chest.

The accurate observer Morgagni, in one of his letters, (Epistle 27, Article 32,) declares " that the vitiated posture of the vertebræ is the most frequent cause of a perverted situation of the ribs and of the sternum;" and not only of these, but also of " *a perverted situation of the viscera and vessels of the belly.*

" Moreover," adds he, " even the celebrated Helwich will teach us how much all the *thoracic viscera were forced into a very narrow compass*, and confined by the spine being distorted anteriorly, in a certain matron; and the illustrious Haller will inform you how far the *great artery* was removed from its proper seat in a woman, whose spine had been forced into serpentine inflections, different from what we see in a natural state, by carrying heavy burthens on her back, which was her method of earning her livelihood. And that this kind of life is, at other times, among the external causes of gibbosity, especially in young persons, is demonstrated not only by reason, but by the observations of the celebrated Nebellius."

In Epistle xxxviii., Art. 40, Morgagni adds a case—

" An old woman, who had an incurvation of the spine, and was lame, died in the hospital at Padua, about the middle of March, in the year 1747. She had been lately brought thither on account of a disorder of the apoplectic kind, which did not appear to have injured any other faculty but that of her speech. In the belly, the trunk of the great artery began, almost immediately after giving off the emulgents, to dilate itself gradually more and more the more it descended, till a little above the division, it expanded itself wholly into an aneurism, which was of two inches diameter in every direction. From thence it was again gradually contracted; yet, in such a manner, that the iliacs themselves appeared to be much wider than they naturally are, to a considerable extent. The internal surface of these vessels was unequal, but the internal surface of the aneurism still more so; where not only polypous concretions were found, but in one part of the coats bony concretions also. I should be inclined to suppose, that the cause of these disorders of the aorta had, in great measure, consisted in the distorted figure of the spine; which having a convexity in the thorax on the right side, had another on the left side, in the loins, which carried away the aorta along with it."

Where so many powerful agents conspire to disturb the regular movements of the most important organs, the foundation of numerous complaints will be gradually laid, and the severity of other complaints will be increased. Extensive observations demonstrate the disease-producing agency of these spinal deviations upon the muscular system, the different organs of the abdomen, pelvis, &c.

The case already quoted from Morgagni, shows that spinal curvature becomes indirectly the cause of apoplexy. There is no doubt that it often tends to the production of epilepsy.

Dr. Harrison remarks, in connexion with the production of deranged digestion, " A curvature in the dorsal vertebræ, whether protuberant or lateral, generally displaces the liver and deranges its secretions. The ribs are forced upwards, and carry the liver along with them. This dislodgment is known by a hollowness in the back. The ribs become flat; the upper part of them is thrown outwards; and the liver can be distinctly felt below their under-edge. The blood, having to rise higher, and perform a longer passage in the vena portarum, to reach the liver, is impeded in its advance, and circulates through it with difficulty. The biliary secretion is defective in quantity, and pale-coloured. The countenance assumes a sallow hue, the appetite fails, and the food is not properly digested. The difficulty which is felt in transmitting the blood through the liver causes an accumulation of it in the whole system of the vena portarum. In consequence, the abdomen is tumid and painful; the bowels are obstinately constipated, and hæmorrhoids often prevail to a great degree."

CHAPTER III.

ON THE VARIETIES, CAUSES, AND TREATMENT OF SPINAL CURVATURE.

SECTION I.

ON THE VARIETIES OF SPINAL CURVATURE.

In unfolding the subject of spinal curvature, it is proposed, in the following pages, to limit the investigation to those cases of spinal curvature, which are independent of structural disease of the bones of the spine.

First.—Lateral Curvatures.

This curvature is almost universally prevalent. Few females in rank higher than the labouring classes are met with whose backs are perfectly straight. The right shoulder is generally enlarged, its top projects forward, with the contrary direction of the opposite shoulder.

In the loins the curve takes an opposite bend towards the left. This is effectual to preserve the centre of gravity, and maintain the erect figure.

The lateral curvature occurs more generally in consequence of the weight of the head, shoulders, and arms, being, in weakened constitutions, more than the spine can support with impunity. The curvature tends towards the right side in consequence of the greater use made of the right hand determining it to that direction.

Second.—Posterior or Outward Curvature.

The posterior curvature or hump-back constitutes another very distressing example. It occurs between the shoulders, immediately below them, and in the loins, the trunk becoming visibly shortened and increased in circumference, producing a disproportioned and unpleasant appearance to the whole figure.

Third—The Anterior or Inward Curvature.

The sinking inwards of the spine forming this curvature, being situated either between the shoulders or the loins, causes persons thus suffering to have a stiff and formal carriage, with a disagreeable rotundity of body. When the lumbar vertebræ are extruded, the trunk cannot be raised to the erect position but constantly inclines forward.

When this curvature presents itself in the lower cervical and upper dorsal regions, it is attended with very distressing and injurious effects upon the lungs and the heart. When in the lumbar region, its distressing effects are experienced in the rectum, bladder, and uterus, which become pushed out of their natural positions and prevent the free performance of their respective offices.

These sufferings are the most formidable and distressing during the progress of child-birth. The channel through which the child passes being reduced renders the efforts of the mother unavailing. In many cases of lingering child-birth, the obstacles are gradually surmounted by the inherent powers of the female, but in this form of curvature the exertions are unavailing in consequence of the impediment being fixed and immovable. All that art can perform under such unhappy circumstances, is to relieve the parent by reducing the bulk of the child. A labour thus conducted necessarily causes the death of the infant, in order to afford the chance of saving the mother: a fact affording strong and sufficient reason why the spinally curved should make some sacrifice in order to cure the spinal curvature.

Fourth.—CURVATURE IN RELATION TO SINGLE VERTEBRÆ.

Besides the preceding curvatures, cases occur of a single vertebra or two of these vertebræ in the neck and loins being displaced from the column. In some cases they are too prominent, and in other cases sink below the line, or assume a lateral direction.

These are the usual irregularities of the vertebral column, but it is clear from the description of the spinal column that numerous curves may be produced; in fact, to the experienced surgeon an endless variety of curves are evident, no two being alike.

Not only does curvature of the spinal column cause, as already explained, abnormal effects upon the trunk, and its organic contents, but its effect is frequently evidenced mechanically in many cases of *lameness* unattended with malformation of the lower limb itself.

Plate 1 shows how, by the relation of the spine to the hips and the legs, spinal curvature causes lameness.

In the case of Mr. T. and in another case of spinal curvature, which came under the author's care, in which, very absurdly, the tendo-Achilles in *both* heels had been cut, no benefit was derived by the patients, for the simple reason, that being very bad cases of double lateral curvature of the spinal column, the lameness was caused by the curvature, and consequently could not be cured by the cutting of the tendon. The fact shows how persons are led away by the desire of operation; such is the intensity of the desire as actually to prevent the operators taking the precaution of making previously a proper examination, so as to ascertain the cause of the lameness.

The results of deviations from the natural arrangement of the spinal cord could have no more striking concluding illustration, than that presented in the following statement by Dr. Harrison:—

"Walking out one evening, I heard a loud cry for help issuing simultaneously from many mouths. I ran to the spot, and saw a man lying upon the ground. A horse was standing near: twenty voices anxiously vociferated, as I hurried along, that he had just fallen from his horse and broken his neck. He lay on the ground motionless, and apparently quite dead. I instinctively placed my knees against his shoulders, and grasping his chin and back of the head firmly between my hands, proceeded to stretch his neck with all my strength. The patient immediately showed signs of returning animation, by moving his limbs, and soon afterwards raised himself from the ground.

"He speedily recovered sufficiently to remount his horse and ride home, a distance of nine miles, without sustaining any particular inconvenience from the accident. It may be said that this man was only stupified by the fall, and would have recovered of himself had he been left undisturbed. Whether the lifeless state to which this patient was apparently reduced, proceeded from vertebral subluxation, or concussion of the brain or spine, cannot be satisfactorily determined. It was and is my opinion that some of the superior cervical vertebræ, probably the first, were partially displaced, and pressed upon the spinal marrow or phrenic nerves, so as to interrupt the motion of the diaphragm, and the process of respiration. In that case, had he not been relieved from compression by restoring the natural arrangement of the cervical spine, death would have speedily closed the scene.

"Accidentally repeating the leading particulars one day at a dinner, an ingenious guest replied, "the case you have described is familiar to me. I heard it related by a London anatomist, about ten years ago, when I was his pupil. The lecturer, he said, was decidedly of opinion that the man would have been irrevocably lost, had you not promptly interfered to save him. He added, a very few moments must have finally decided his fate. The teacher gave it as his opinion that some of the ligaments attached to the toothed process of the second vertebra were stretched in the fall. This brought the process into immediate contact with the spinal cord, and led to the compression, which would have proved fatal had it not been speedily removed." Another guest, an intelligent country gentleman, offered an explanation deduced from comparative anatomy. He observed, that in the prosecution of field sports he often caught wounded hares and rabbits alive: to put a speedy end to their sufferings, he made it a rule to luxate the first joint of the spine, which always proved instantly fatal. He effected the disjunction by firmly grasping the back part of the animal's neck, close to the skull, with his left hand, and fixing the other upon its forehead. A slight degree of force is sufficient, in this situation, to drive the condyles of the occipital bone away from the first vertebra, and produce complete dislocation."

SECTION II.

THE VARIOUS THEORIES AND MODES OF TREATMENT OF SPINAL CURVATURES.

Various and conflicting have been the opinions respecting the cause of spinal curvature. And equally various and conflicting have been the means made use of by the various theorists: and in that proportion in which any theory has failed in affording the right explanation, has been the injuriousness of the means used.

Glisson, one of the earliest of modern writers on the subject of spinal curvature maintained, that in spinal distortions, the bones are *unequally nourished*, and *grow faster on* ONE *side than the* OTHER. He further maintained, that, from this unequal nourishment of the bones of the spinal column, one side of a vertebra or vertebræ grows thicker than the other side, and that thus every curvature originates.

Supposing the above to be true, that any one vertebra should thus increase by diseased growth, it seems very strange that a series of vertebræ forming a curve (for several vertebræ must be modified so as to form a curve) should all acquiesce to do the like, and stranger still is the fact, that nature to relieve herself of the increased amount of labour in consequence of the first curve, should, lower down, form another curve, i. e. establish other growings of the vertebræ in the opposite direction: which must happen if Glisson's view be correct.

To receive Glisson's view, having these facts before the mind, requires an amount of credulity, it is presumed no one in these days would exhibit; in fact, his view requires the belief that two processes should be acting in opposition to each other at the same time, in different parts of the same spine.

Mayow, who paid considerable attention to spinal curvature, considered that one set of muscles, acting more powerfully than another set of muscles, bend or draw the bones out of their proper position, causing the curves that take place.

Dr. Harrison thus exposes the unsoundness of this view:—

"Were it to be proved, that in the *extremities* two sets of muscles are acting in constant antagonism to each other, it would not follow that *those in the trunk* are similarly employed: indeed, there is no such provision in the structure of the muscles of the back. Most of these muscles are so extensive in their attachments, that if supposed to be concerned in forming the two lateral or sigmoid curvatures of the spine, they must produce a different action at one end from what they do at the other. Such an admission is altogether improbable, and is in direct opposition to every principle of muscular motion in other parts of the human body. We have strong muscles to raise and bend the trunk; but they proceed in unison with one another, and are never placed in antagonism. These two motions, the principal ones of which the spine is susceptible, are not synchronous; they interchange with each other, and consequently do not interfere."

Mayow founded a practice upon his theory.

"The sufferer, placed upon *an inclined plane*, is confined, and prevented from sliding downwards, by a band fixed under the chin. In this situation he is directed to work and twist the muscles of his back, to increase their tone and action."

Modifications of Mayow's practice have been brought forward during the last few years. The muscular treatment of spinal curves has been much lauded. Considerable revenues have been realized by the practitioners, who have carried out this system, but where are the permanent beneficial results that have occurred from the same?

It is not denied, that the muscular system has a great power in connexion with the spine; in fact, it is the moving power. In reference to this it may be useful to notice the following facts, which exhibit strongly the power of position in producing spinal curvature, but do not prove that muscular action is the *cause* of spinal curvature.

"Spinal curvature may be produced in a person previously healthy, by adopting a leaning posture, and continuing in it day after day, for a long time together. This is exemplified in the colliers of a particular mine in Lancashire, who are obliged, from the thinness of the stratum, to sit in a bent posture, and force their right side into the vein, while digging out the coal. In process of time, the spine is, in all of them, curved towards the right, from their continuing so many hours in a strained attitude. These labourers sleep above ground, and therefore retain a tolerable amount of health. Similar gibbosities, arising from the same cause, are said to prevail among the colliers near Rotherham in Yorkshire. The inter-vertebral substances are in these persons compressed on the left side, by the bodies of the vertebræ being pressed nearer to each other.

The same vertebræ are forced asunder on the opposite side; in consequence, the ligaments are stretched and extended. When the position is frequently changed, and the incumbent weight removed, the inter-vertebral matter for some time recovers its former dimensions. The vertebræ no longer press unduly upon the ligaments, which contract by an inherent elasticity, and resume their former position. Repetition produces similar effects, which are also removed in the same manner. At length, some of the ligaments give way permanently, and permit a single vertebra to jut out. A dislodgment being once made, and the same causes continuing to operate, it protrudes more and more. Other vertebræ follow in succession, because the proper support being taken away, they no longer receive their accustomed protection. The Athenian rowers were deformed in the shoulders, from their peculiar occupation on ship-board. The greater part of the Thames watermen are said to be similarly affected, and, as it should seem, from the same cause. It is likewise well known, that the bargemen in the Queen's ships are selected for their graceful and athletic figures. The principal business of these mariners is to convey officers from place to place, chiefly by rowing. Sailors so employed gradually lose their fine shapes, and are called, in the jocular language of their comrades, "bible backed," to mark the striking change of personal appearance, from their new service. In France, too, the aged vine-dressers, *(les vieux vignerons,)* contract, from daily occupation, a permanent rotundity in their backs. With many it increases to decided hump. Labourers in working among the vines are obliged to remain constantly stooping. This posture becomes at last a fixed and unalterable habit, because the spinal joints first assume a new action, and afterwards accommodate themselves to the change. It is owing to a similar disability of the ligaments, that certain religious fanatics in the East lose the power of moving those parts of their bodies which they had long held in a state of continual restraint. We have here an assemblage of curious facts, observed and recorded in very different situations and circumstances. Nor must it be forgotten, that these several distortions have occurred in vigorous constitutions, from the employment of severe and long-continued muscular action, aided sometimes by a favourable disposition of the person.

" During the labour of rowing, for example, the muscles of the arms and back powerfully withdraw the ligamentous articulating tissue from the upper dorsal vertebræ, while, by the position adopted, these vertebræ are forcibly impelled in an unsupported direction. The spinal column is so firmly bound together, and its parts are so curiously interwoven, that they for a time successfully resist the most powerful efforts. Frequent repetitions oblige these parts at length to give way. A single bone slips a little. The column, once deranged, becomes more easily broken, and ultimately suffers all the irregularities which have been represented.

" Long-continued playing upon the piano-forte is, for the reasons already given, a dangerous recreation, particularly with delicate females. Though the performers neither raise their shoulders nor exert their arms, like athletic boatmen; yet, nevertheless, stooping to finger the keys and the often long-continued muscular activity, dispose the back to bend outwards. This injurious consequence might, I think, be greatly averted, were the notes and the instrument placed high enough to preserve the trunk erect during the performance, as a moderate action of the arms strengthens the spine and prevents deformity, when it is assisted by a good carriage."

These facts have been brought forward, because it is essential, in order to judge rightly of the much-lauded muscular system of treatment. The muscular system should be allowed all that is due to it in reference to the formation of spinal curve, as thus, it will be possible to show, that, though active in producing spinal curvature, it is not efficient in *curing* that which it has helped to produce.

In the production of curvature by muscular exertion, it is quite clear, that the muscular action must induce some change in the structure of the parts to which the muscles are attached. Unless this happened, spinal curvature cannot take place; muscular elevations and enlargements of the muscular fibres covering the back might be caused, which might by some be mistaken for spinal curvature;

but these are not spinal curvatures. "The muscles, destined to move the spine, are attached to the articulating fibrous structures or ligaments, and not to the vertebræ, which they enclose. This fibrous substance is stretched by them, and, in *weakly* constitutions, becomes preternaturally elongated, partly by the muscular force pulling it, and partly by the bones being pushed against it in the various turns and attitudes of the body. As these parts gradually give way, the joints become less fixed, and admit of greater motion. A slight luxation is first produced in one joint and afterwards in several. If the further progress of the complaint be arrested in this early stage, the person is said to have got round shoulders, or to have acquired an awkward carriage ; whereas, the real fact is, that spinal curvature from displacement of the vertebræ has commenced."

Allowing muscular action to cause spinal curvature, it produces, in so causing the curvature, as thus explained, an altered state of the ligamentous tissue, and a displacement of the vertebræ contained in the ligamentous tissue, which displacement is attended with an alteration of the proper condition of the inter-vertebral cushions (page 5, plate iv., figs. 1, 3, 4 *b*), situated between the displaced vertebræ.

Can it be for one moment entertained by any person acquainted with the facts already recorded in reference to the bones of the spine and their ligaments, that any muscular action can restore the *ligaments* to their natural state, while these ligaments, besides the altered state induced in them, are kept in an unnatural condition by the vertebræ, which they enclose, being displaced, and thereby acting upon them most injuriously ?

And, further, can it be supposed, that any muscular action can restore the *displaced vertebræ* to the proper position, or even if muscular action did this, could PRESERVE the bones in their natural situation, by this muscular action supposed to be restored ?

It may be and has been said, Do not we make use of the muscular power to restore a dislocated arm to its socket ; and why should not muscular action restore the vertebræ, so to speak, to their sockets ? Putting aside for the moment the want of analogy between the socket-joint of the arm and the extremely peculiar joints formed by the vertebræ of the spine, it is quite clear, that even when a dislocated arm is restored to its socket, the surgeon is obliged to use means to keep the arm in its socket, because, on the displacement of the arm, the ligaments of the shoulder joint have been so stretched, that they would not be able to retain the joint in its place; and any surgeon who would talk of restoring the dislocated arm to its natural condition by *mere muscular* treatment, the treatment so lauded on spinal curvature, would be deemed ignorant of his profession.

How much less likely then is it to be supposed, that where the lengthening and the weakening of the ligamentous tissue intended to hold the vertebræ in their places, have by a LONG PROCESS *acting upon a* WEAKENED *constitution*, been rendered so considerable as to allow the displacement of the vertebræ, that any mere muscular treatment can restore these ligaments to their natural state? In fact, to use muscular treatment till the vertebræ are restored to their natural position, is as absurd as to attempt to cure a dislocated arm by making a man use the muscles of his arm.

It is to be hoped that ere long the proposal of curing spinal curvature by muscular treatment previous to the restoration of the bones to their proper position in the spinal column, will be scouted by the public, and be deemed derogatory by the profession.

To conclude, muscular treatment of spinal curvature must be inefficient, because the ends to be gained before spinal curvature can be cured, can never be realized by mere muscular action: these ends are, first, the restoration of the bones to their natural position; second, the preserving them in that position, or as nearly as possible as the curve will admit, in that position; third, the giving the opportunity to the inter-vertebral substance to recover (by removing pressure from it), its natural shape; and fourth, to allow the ligamentous tissue enveloping the vertebral joints to recover its primitive shape; to be recovered only by regaining its natural elasticity.

No additional remarks are necessary to prove that mere muscular treatment cannot realize these ends.

Muscular treatment when the curve is cured may then be useful. It will give strength and tend to prevent a return.

Mr. Pott, in his valuable remarks on Palsy of the Lower Limbs,* put forth the following theory of spinal curvature:—

"The true cause of the disease is a morbid state of the spinal *bony* column and some of the parts connected with it; which distempered state of parts will, upon careful inquiry, be always found to have preceded the deformity some length of time."

The unsoundness of Mr. Pott's view is proved by the fact that he himself dissected cases of spinal affection, and sometimes found them "without any apparent affection of the bones." He allows also that some dissections have proved—"That the vertebral bones are not always enlarged, or otherwise disordered, even when they are accompanied with a greater or less degree of deformity and crookedness of the spine. Many skeletons, showing lateral, posterior, and anterior curvatures, may be seen in the anatomical museums; several of them so exceedingly misshapen as to leave no doubt of their having occasioned death, by interfering with the functions of the spinal marrow and the internal viscera. In some, the vertebral bones and cartilages show no other signs of disease than such as arise from unequal pressure; they are hard, firm, sound, and when free from pressure are of the natural size. In order to form a curvature, the bones and cartilages must necessarily be fuller on the outside, and compressed on the inside. The bones are even unnaturally separated in some parts of the external bow, yet nothing like ulceration had taken place."

---

* Chirurgical works of Percival Pott, esq. vol. iii, page 482.

Such being Mr. Pott's theory, his practice must have accorded, and destructive was it. He maintains:—

"No degree of benefit or relief, nor any the smallest tendency towards a cure, is to be expected until the caries be stopped, and the rotten bones have begun to incarn: the larger the quantity of bones concerned, and the greater degree of waste and havoc committed by the caries, the greater must be the length of time required for the correction of it, and for restoring to a sound state so large a quantity of distempered parts."

His practice was to excite inflammatory action by caustic issues, and thereby induce anchylosis, or union among the morbid bones. That such treatment is useful at an advanced period, after caries is actually formed, may be agreeable to sound practice, though it has never obtained the universal approbation of medical men. Professor Rust remarks, that numerous observations and long experience have proved to him, that issues rarely produce the desired effect, and that they even frequently accelerate the progress of the disease in a late stage.

In fact, in relation to spinal *curvature*, Mr. Pott did not seek to effect the cure. His object was merely to arrest the progress of the caries, and he was content with *a permanent deformity* produced by this very union of bones diminished by caries. His own remarks put this beyond dispute:—

"The thing aimed at is the consolidation and union of the bones, which had been carious, and are now become sound. This is the *sine quâ non* of the cure, and this must, in such cases, render the curvature, and consequently the deformity, permanent. The issues will restore the use of the limbs, but not the lost figure of the spine.

"That when two or more vertebræ are affected, forming a large curve, however perfect the success may be with regard to the restoration of health and limbs, yet the curvature will and must remain, in consequence of the union of the bones with each other."

The inefficiency of this practice in every deformity of the spine is evidenced in the fact, that, though sanctioned by the authority of so great a name, the practice is now discarded by every well educated and judicious surgeon.

Mr. Chessher, a surgeon who practised in Hinkley, gained great fame many years since by his method of treating spinal curvature. He never published any of his views, and therefore the theory on which he founded his practice cannot be explained. His practice, however, may be detailed, because the modern practice is a combination of his plan and of the muscular treatment plan.

The following description is given by a lady, who underwent his treatment with no permanent benefit, but with injury to her constitution, and was ultimately cured by Dr. Harrison:—

" At the age of ten, my right shoulder was discovered to be a little enlarged, and my health from that time became impaired. With a view to lessen the spinal defect, I had recourse to a horizontal position three or four hours every day. Before I attained the age of thirteen, my friends requested Mr. Chessher's opinion relative to the state of my spine. As the protuberance was only trivial, he considered it best to continue the recumbent method previously adopted. This plan I pursued six years, without any apparent benefit.

" At sixteen, when I enjoyed good bodily health, I first became Mr. Chessher's patient, and commenced to wear his steel collar, which conveyed the weight of the head upon the hips, and acted with pressure below the loins, by means of various steel plates attached to the lower division of the collar.

" I continued to recline every day, wearing the steel apparatus; and in the morning, during the whole time of its being fitted to the body, I remained suspended in a neck swing, which is merely a tackle and pulley fixed to the ceiling of the room: the pulley is hooked to the head-piece of the collar, and the whole person raised, so that the toes only touch the ground. Sometimes I used the reclining bed, which combines extension with the recumbent position. It consists of two boards, the uppermost of which is made to slide with rollers upon the lower. The patient is slung by the head to a hook fixed at the top of the under-board, and lying on her back on the sliding one, she allows it to run down by means of a cord held in the hand. Exercise in walking and riding was also recommended, which I continued, until debility compelled me to decline these muscular exertions. After having borne the collar nearly two years, weakness increased, and frequent faintings ensued: this languid state of health was followed by a severe attack of fever. Three weeks after its seizure, and before it had subsided, an entire loss of motion of the lower limbs instantaneously took place, while I was in the act of rising from my seat with an intention of crossing the room, and wholly unconscious of my unhappy condition. After taking me from the floor, upon which I had just fallen, and removing the steel collar from my person, I was carried to bed. The following day the fever returned. A wish, very natural in my situation, to ascertain how far paralysis had affected my limbs, induced me to pierce them through the skin with a sharp needle. The experiments, several times repeated, did not excite the smallest perception.

"This second attack continued twenty-eight days, and every other day deprived me of all recollection. As my faculties returned I suffered much pain in the flesh where the collar had acted. These affected parts wore at first a livid appearance, and became insensible to the touch; spirits of wine, with friction, were then applied, until the livid hue changed to a black colour; finally, suppuration commenced, and the sores became gangrenous wounds. One of them, on the left side, extended to four inches and a half, by two and a half. The other, on the same hip, to nearly three inches every way. On the right side I had only one sore, a little below the hip. It was three inches in length and width.

"Besides these wounds, I had another at the bottom of my spine, two inches and a half in length, by more than one in breadth.

"The ulcers were all situated in parts where the collar had rested, and owed their origin, as I think, to its oppressive weight. The anguish excited by the mortification, loss of substance, and new flesh forming nearly excluded all sleep for one whole month, notwithstanding the use of strong opiates every night. The mortification, which penetrated to the bone was subdued slowly, and with great difficulty.

"These sufferings confined me to my bed four months, during which time the enlargement in my right shoulder had visibly increased; the spine had also taken a lateral curve. Three months after these severe attacks, my health and the use of my limbs were gradually restored. Upon the first return of feeling in the legs, they became unremittingly painful, and the knees were likewise contracted. These distressing maladies left me by degrees, as my strength increased. At nineteen I again consulted Mr. Chessher, and by his advice resumed the steel collar. From that period to twenty-four my health remained pretty good. Still the spinal distortion continued to increase, notwithstanding every endeavour on my part to subdue it. My confidence under this discouragement was not lessened, because I found, from the very great elasticity of the spine, that it uniformly gained in length every morning, by the use of the neck-swing, from half to three-quarters of an inch, and after having, in the course of the day, laid down according to my constant rule, two hours with the collar on, and screwing it up in that position, the spine always increased another inch. I was convinced of this stretching, so gratifying to my expectations, because the collar required to be drawn up a whole inch on rising from the reclining position. It was, therefore, usual for the back to gain two inches or more in the course of every day, and to lose them again at night upon removing the collar.

"At twenty-five the debility returned with its former severity, and was followed by weakness in the loins, pains in the side, shortness of respiration, palpitations of the heart, and languid circulation in the lower limbs, attended at times with much pain. And at intervals the agony was so great, that I observed to a medical gentleman, I could cheerfully submit to amputation of the suffering members, were I only assured that the operation would remove the distressing sensations under which I was then labouring. In order to alleviate the latter affliction, I tried electricity, galvanism, flagellation of the limbs with nettles; I also applied flour of mustard to them, with powerful friction, and, immediately afterwards, immersion in hot water.

"With a wish to relieve the former complaints, I took various tonics, and resided where I could inhale the marine air, or occasionally use the tepid or cold sea baths; these remedies failed to produce permanent good. In short, my health rapidly gave way, in defiance of the means employed, until I found myself unequal to continue the exercise of walking or riding, both of which I had resumed on the return of my improved health. Languor and faintness, accompanied with cold perspirations, frequently seized me. The weakness was so great, that, after walking only a few steps, I lost my breath, became unable to stand erect, and I found it necessary to support my back by placing both hands firmly upon the hips. Talking soon fatigued, and produced difficult breathing. At length I was so much reduced, that I became unable to support the erect posture many minutes together.

"At the age of thirty-six I entirely laid aside Mr. Chessher's steel collar, and remained upon an inclined plane more than two-thirds of my time for one whole year and a half: yet this resource, like the former ones, did not succeed; and from extreme weakness, my neck was unable to support the weight of my head. So great had my distortion become at this time, that from eighteen down to nearly thirty-eight, my spine in length had lost more than six inches.

"Just previous to the age of thirty-eight, I became thoroughly dissatisfied with the plan I had followed for so many years to no good purpose. I then resolved to consult Dr. Harrison, and after undergoing his treatment twelve months, the spine recovered in length three inches and three quarters.

"The distressing nervous sensations in the region of the spine, which had for many years severely tormented me, were entirely removed in the first three months. Soon afterwards I was released from the disagreeable tightness in breathing, and frequent pains of the left side. In the following six months my constitution was in various ways essentially restored. Not only were appetite and digestion promoted, but my rest was more refreshing, and my nerves gained strength. The lungs now act freely, and I have not latterly suffered any return of palpitation. The former unceasing coldness in the lower limbs has entirely left me, and the pains in them are much abated, but not wholly subdued. These improvements have been progressive to the present time, although I have sustained frequent relapses from colds and bilious affections. The appearance of my spine is also greatly amended. It has, from the first, increased in length more than four inches, by adhering to a plan of cure, which was neither accompanied with pain, nor productive of other inconvenience."

Mr. Chessher's plan embodies recumbency and the use of a fixed support and an irresistible spine extender. This twofold agency is exhibited in most of the modern modes of treatment, and the injuriousness thereof is exhibited in the case already recorded. This case proves, first, that partial incumbency upon an inclined or flat plane cannot subdue, though either of them will retard the progress of spinal distortion. It proves, second, that the means used (and the remarks apply to the modern means), have a direct tendency to injure the frame and increase the curvature.

It may be useful to add some further particulars of Mr. Chessher's plan, as such plan modified is that adopted by most of the modern practitioners in reference to spinal curvature.

"The first thing that Mr. Chessher does, is to construct a steel apparatus or collar, of from ten to sixteen pounds weight. This is fitted to the upper part of the pelvis, which has to bear the whole burden. By means of a rod, which extends along the back, and rises above the head, he can at pleasure stretch the vertebral column several inches, and keep it in that forced state for any length of time. The apparatus is put into use every morning, and continued until night. This is the plan followed through the whole process. As the spine gives way, the mechanism is enlarged, to keep it continually stretched. The column, as already observed, is often extended more than three inches, and the increased length, according to my calculations, is chiefly, if not wholly, acquired by acting upon the fibrous structure of the vertebral joints. Now, allowing the articulating ligaments are extensible, they possess little or no contractibility. It follows, that whenever the tormenting load is removed, the back feels weak and loose. The bearer, unable to remain erect, without his protecting armour, is obliged to lie down. In this posture he becomes easy; and on rising again from the bed, is compelled to buckle on his collar, before he can bear to sit up even for a few seconds. In this way he goes on supporting a tedious existence for several years, gaining when dressed three inches, and at night always sinking down again to his former dimensions. During this time, the ligaments gradually lose their original firmness, and permit the vertebræ to slide more and more out of their line, by which means the deformity keeps increasing. At length the sufferer, wearied with continual disappointments, casts off his cumbrous machinery. He then becomes sensible of the full compass of his distressing infirmity, because he finds the spinal column unable to remain upright and support the incumbent weight. It slowly recovers its former strength. During this anxious period the weakened fibres suffer the vertebræ to retire further and further from their natural positions. In consequence of the displacement, a rapid augmentation appears in the complaint, which he had taken so much pains to reduce. The conflict having ceased, the distortion is arrested, and remains stationary for the rest of life. In many instances, the constitution, unable to maintain the arduous struggle, becomes the prey of some mortal disorder.

“ Delicate females, especially young girls, are so much fatigued and oppressed with the heavy load which they are directed to carry, that they sink under the burden. It will occasion no surprise to hear, after what has been stated, that the instrument produces great and constant uneasiness wherever it is made to rest, and not unfrequently ulceration and gangrenous sores.

" The harassing weight and irritations from this cause are frequent harbingers of sickly health; and when such a disposition has once formed, slight matters will suffice to produce actual disease. Accordingly, it has been said that scrofula and phthisis pulmonalis are often excited by Mr. Chessher's process. When patients remain well during the treatment, there is, nevertheless, too much reason to fear that they will be severely afflicted at some future period. The heavy weight placed upon the pelvis is sufficient to prevent its regular enlargement, though it may not alter the situation of the bones. But this oppressive load has in many instances produced distortion in parts where such consequences are most to be feared. The lumbar vertebræ and os sacrum having been driven inwards, the entrance into the pelvis is naturally diminished. This want of capacity increases the difficulties of parturition, and sometimes obliges the practitioner, in the exercise of a sound discretion, to sacrifice the infant in order to save the mother."

This lengthened detail of Mr. Chessher's plan has been given, because, as stated, this plan, modified by each practitioner, constitutes the principal features of the methods adopted by the majority of surgeons, who engage at the present time in the treatment of spinal curvature.

All these proceed upon the assumption that mechanical means can force the spine straight. It may be that mechanical force can do this, but it is quite clear that mechanical means, however complicated, cannot alter the conditions upon the presence of which the spinal curvature alluded to occurs.

Nothing hasty can be done in these matters; spinal curvature is slow in its approach, and it will be, under proper curative means, slow in its removal.

It will not be necessary to notice further the different screwing up apparatuses which have been invented; it is sufficient to point out that all these apparatuses cannot impart strength: they derive their power, of necessity, from the body to which they are fastened; that is, the weak lower limbs have, in a weakened patient, to support and to keep straight the spinal column: that is, weakness is to support weakness and to make weakness strong. These mechanical apparatuses give, it is acknowledged, temporary relief; but the ultimate result is always, where there exists decided spinal curve, injurious.

The most common result from these methods is pulmonary consumption. Many young persons, unwilling to adopt Dr. Harrison's plan, have tried these artificial support and extending means, and, after three or four years in time wasted, and much money expended in expensive apparatuses and surgical supervision, have at last shown such decided evidences of pulmonary consumption, that they have been obliged to lie down, and then all the pulmonary symptoms have ceased.

CHAPTER IV.

ON DR. HARRISON'S THEORY AND TREATMENT OF SPINAL CURVATURE.

SECTION I.

A STATEMENT OF THE CIRCUMSTANCES WHICH LED DR. HARRISON TO THE INVENTION OF HIS METHODS OF CURING SPINAL DISEASES.

Dr. Harrison, after having received his medical education at—at that time—the first medical school in the world, namely, *Edinburgh*, and having obtained his degree of Doctor in Medicine, settled in Lincolnshire, where, by his talent and his connexions, he placed himself in a situation of independence. He had retired from the duties of his profession, when the following train of circumstances occurred.

Dr. Harrison had married a lady, belonging to the respectable family of the Chaplins in Lincolnshire. A cousin of his wife was suffering under *curvature of the spine*, for which caustic issues and other means had been used without success. She suffered much in her health.

Dr. Harrison became interested in her case, and finding that the old system did not produce any beneficial effect, he was led to inquire more fully into the nature of the complaint. By the fact that this lady had suffered at the commencement and during the progress of the curvature, so little from pain and other indications of inflammation, he was satisfied that the disease could not proceed from organic alteration in the bones or the cartilages. He thought that the disease must be *wholly confined to the connecting ligaments of the vertebræ.*

Having adopted this idea, he proceeded to consider the *means* how to carry out a cure, founded upon such a theory.

These means (which, as improved by experience, are stated in a succeeding section) he adopted, and his patient was cured.

This immediately led to other cases, and Dr. Harrison was again induced to recommence practice, and principally for the cure of *spinal affections.*

SECTION II.

THE THEORY UPON WHICH DR. HARRISON FOUNDED HIS PRACTICE.

Dr. Harrison maintained, that, seldom in cases of spinal curvature or deformity, are the *vertebræ diseased:* a position in direct opposition to the opinions generally entertained at the time, and still held by the profession.

Most practitioners taught that the vertebræ are affected with various diseases, of which *caries* was regarded the most common. They taught further, that these diseases in the bones induced the curvature or deformity. Their *practice* corresponded with their hypothesis; caries being a violent disease, violent remedies were used; such were *caustics*, *setons*, *issues*, *moxas*, and other severe remedies.

Dr. Harrison, on the contrary, taught that the vertebræ are liable to a partial displacement, which he designated

SUBLUXATION.

That this partial displacement depends upon an altered condition of the

LIGAMENTS,

which alteration is attended with the production of a state which, under the operation of injurious causes, admits of the

ELONGATION

of the ligaments, and thus, Dr. Harrison maintained, the displacement of the vertebræ takes place; the nature of the curvature or the deformity having relation to the nature of the displacing power and the direction in which it perated.

Such being the origin of spinal complaints, one important step in the *cure* onsisted, Dr. Harrison maintained, in restoring to these ligaments, after removing the curvature, their natural and proper condition.

Dr. Harrison further classed spinal curves and deformities under the following heads:

1. The posterior, or outward curve.
2. The anterior, or inward curve.
3. The double lateral, or figure of *S* curve.
4. The semilunar curve.
5. General irregularity of the spine.

SECTION III.

THE TREATMENT ADOPTED BY DR. HARRISON, AS FOUNDED UPON HIS THEORY.

The particulars of Dr. Harrison's mode of treatment may be classed under the following heads:

1. The removal of all causes which could add to, or keep up, the spinal curve or deformity.

2. The mechanical means, acting most efficiently in removing the curve or the deformity.

3. The means to prevent a return of the curve or deformity.

In reference to the causes, adding to or keeping up the spinal curve or deformity, the principal is the *perpendicular position of the body:* and Dr. Harrison perceiving that the weight of the upper part of the body in this posture must of itself increase the spinal curve, made, as an essential part of his plan of treatment, the adoption of *horizontal recumbency.*

To realize fully this horizontal recumbency, Dr. Harrison had couches made of firm materials, in three pieces, the central piece removable, so as to allow the necessary functions to be performed without any change of posture. On this couch the patient constantly reclined.

In regard to the second part in Dr. Harrison's plan of treatment, it consisted of *extension*, *friction*, and *pressure.*

The extension is generally performed at the lower part of the body, by means of a small windlass round which straps are passed, which are fastened to a belt that passes round the loins and the belly above the hips; at the upper part of the body, by armlets, which pass under the arms, and fastened by straps to the crib. The active extending power is below; the passive extending power is at the arms.

The friction is applied to the spine from the neck to the sacrum, and oil is made use of, the rubbing being applied for an hour each day by the hand. In turning the patient on the face for friction, the plan adopted is to use a sheet, bringing it under and over the body, the arms being enclosed; and the attendant holding the two ends close to the body of the patient, lifts the patient over without bending the spine, or changing the horizontal posture.

The pressure is produced, first, in conjunction with the *friction;* in rubbing, pressure being made according to the nature of the curve.

Besides this means of pressure, Dr. Harrison used an instrument, called a *pressing key*, by which he pressed upon the bodies of the vertebræ, between the spinous and the transverse processes.

An additional means by which Dr. Harrison applied pressure is the *shield.* This is made of small narrow slips of wood, glued upon some stiff cloth and padded: the shape, the length, and the position of the shield being regulated by the nature of the curve or the deformity.

In regard to the third part in Dr. Harrison's mode of treatment, the *means to prevent the return of the curve*, the following constituted the means:—

After the curve or deformity was cured, strengthening means were used; friction being still used, but, instead of the oil, some suitable linaments were employed; the horizontal posture and the shield being still adhered to. These were pursued for six months.

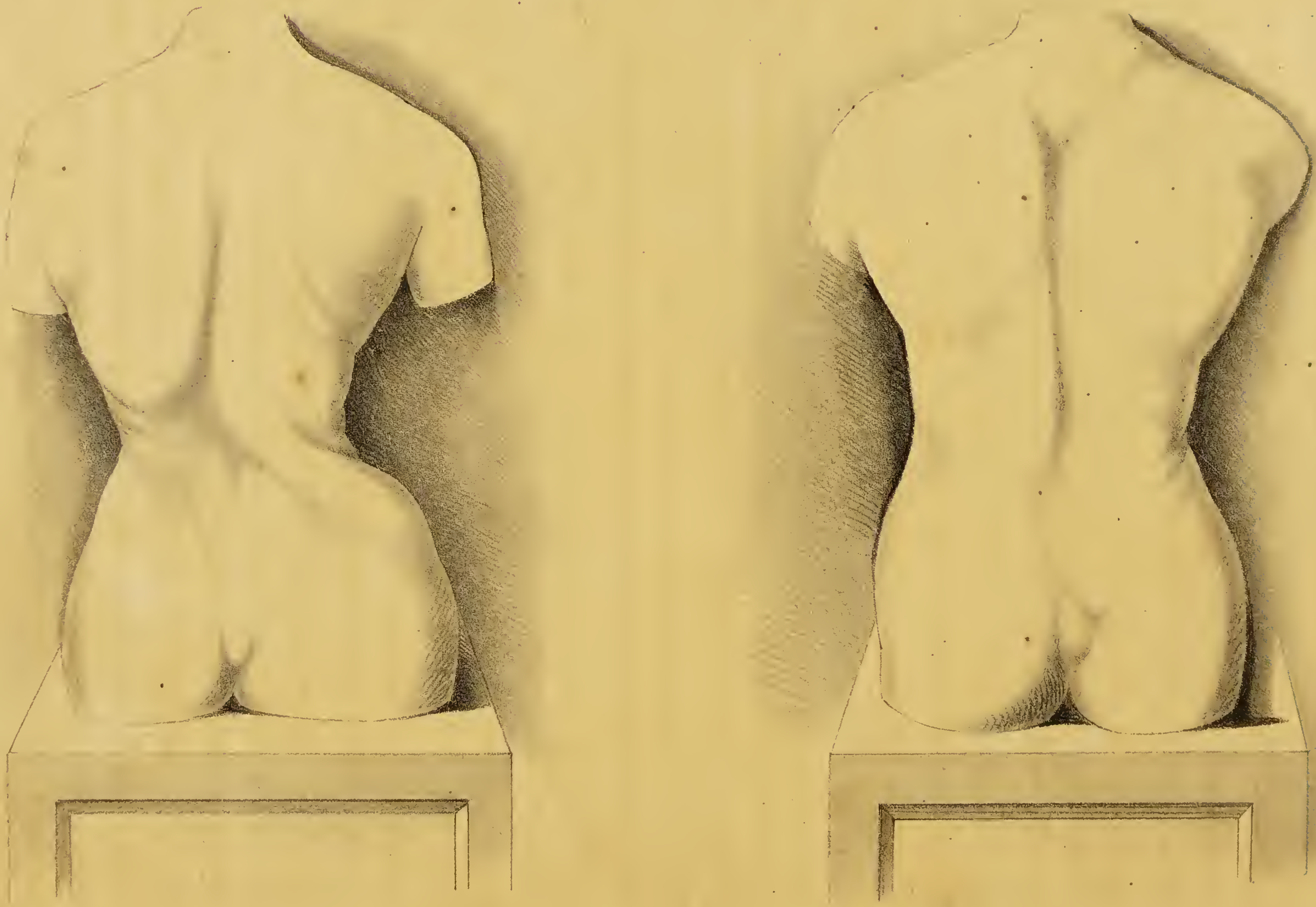
After this period, the patient puts on support stays, the hips and the arm-pits being the sustaining parts. These stays were worn constantly, and the patient began then the *third* means, consisting of *gradually augmented exercise.*

The exercise was walking, supported by two persons, and continued at first for *two* minutes, *once a week;* increasing a minute each time of walking, until a period of twenty minutes was attained; then walking *twice a week*, commencing with ten minutes, and increasing gradually to twenty minutes.

Dr. Harrison further recommended that the back shield should be worn after the cure was completed, for a year and a half.

The excellence of Dr. Harrison's system is evidenced by one special fact, *that little or no medicine is required* during the treatment.

It is found, that as the patient's spine begins to be acted upon, and the pressure is taken off, the actions of the body take place with regularity; a fact demonstrating the absurdity of attempting to remove these diseased states by medicines, and demonstrates, at the same time, the influence of deviations in the spinal column on the health.



MARIA TAYLOR

CHAPTER V.

CASES ILLUSTRATIVE OF THE EFFICACY OF DR. HARRISON'S MODE OF TREATMENT.

The preceding history of the structure of the spinal column and of the parts connected therewith, and the statement of the various theories and modes of practice in reference to spinal curvature, form an appropriate introduction to the results now to be recorded, as obtained by pursuing the system devised by Dr. Harrison.

CASE I.

A CASE OF CURVATURE OF THE DORSO-LUMBAR REGION, OF ELEVEN YEARS' STANDING, CURED IN A PERIOD OF ONLY SEVEN MONTHS.

M. T., aged twenty-three, in whom there was a curvature of the dorsal and lumbar region, (plate VIII.) This curve resulted from a fall, which occurred in 1836. She injured the left leg, causing a serious wound, which rendered her unable to walk for nine weeks. The limb not gaining its original power, the patient, to rest it, was accustomed to allow her entire weight to be on the other limb.

Two years subsequent, a lateral curvature of the spine was observed for the first time, (attention being directed thereto in consequence of one hip being higher than the other,) causing a hollowness or falling in of the right side, and a projection of the ribs of the left side. She soon became tired, while in the standing or sitting position. A medical gentleman, who was consulted at *this* time, stated that it was of little consequence, and that "she would grow out of it." The curvature gradually increased, causing a walk to school to tire her exceedingly. She had an almost constant aching pain in the back, great lassitude, frequent constipation, and was always complaining of weariness. Getting worse, she, by the advice of a friend in 1842, consulted Dr. Epps, who recommended, as the only means of cure, the Harrisonian. She continued getting worse, the ribs overlapping each other on the right side, causing great oppression to the breathing, and the curvature gradually increasing, she, in August, 1847, was admitted a patient into the Institution, the case falling under the author's care.

Shortly after undergoing treatment at the Institution, the weariness, the pain in the back, and the lassitude left her, and the bowels (without medicine) became regular.

At the expiration of two months from her first admission, the right side became nearly equal in length with the other.

At the end of the seventh month, the spine became straight, and, at the expiration of the eleventh month, she was allowed to walk a little, gradually increasing the time. She experienced no pain, and after repeating her walk a few weeks, left the Institution—quoting from her letter of thanks—"rejoicing it had been my privilege to enter it [the Institution] and obtain so valuable a benefit, the change from a crooked to an upright figure, which is readily acknowledged by my friends and attested by the casts at the Institution." (See plate VIII.)

A better instance, perhaps, could not be given than the above, of the want of proper treatment in the first instance, and of the absurdity of the too commonly promulgated notion of the patient "growing out of it." This error in judgment is most serious. Hardly ever does such a growing out of it occur. In fact, the curve gets worse and worse, and afterwards when the patient becomes a mother, has a family, she finds when about forty-four, the effect of the curve on her general health shows itself, and then it is impossible to devote the time to the cure, domestic duties preventing recumbency. How bitterly does the patient then lament that she was deceived into leaving the spine uncured in her younger days.

CASE II.

CASE OF LATERAL CURVATURE, PROGRESSING TOWARDS THE SECOND STAGE OF CONSUMPTION, CURED.

Miss D. J., aged 12½, daughter of a clergyman in the Isle of Wight, sanguine temperament, soft skin, fair complexion, suffers from lateral curvature of the spine on the right side, extending from the first dorsal vertebra to the last lumbar. The curvature passes under the right shoulder blade, and is very considerable. The blade-bones at their lower edges nearly touch, and the patient can bring them in contact with ease and great force; the right being the more prominent. The ribs in the right hypochondrium are thrust down; in the left they stand prominently forward, forming an oblong swelling in the front. The chest is peaked, and the top of the left shoulder is much below the other. The countenance is contracted, looking aged and care-worn. She is become very inactive and desponding, under a strong apprehension that her malady is incurable; many surgeons having declared that no expectation of removing the curvature can be entertained. The complaint is of three years and a half duration. Menses appeared for the first time, four days since.

The lumbar curve became nearly effaced; the other already much fainter; the scapulæ are separated to a great distance from each other; the oblong ridge in front has nearly disappeared; the ribs on the right side have risen higher, and the chest looks rounder and more expanded.

November 13th.—The features have recovered their natural appearance, and the health is particularly good. The lumbar vertebræ are entirely rectified in position, the front ribs on the left side restored, those on the right more elevated. She looks better in every respect, and the spine is become nearly straight. Menses reappeared within the last fortnight.

March 10th.—The spine and the ribs have returned to their natural situations; the form of the trunk, which was originally very fine, is entirely restored; she looks extremely well, is in excellent spirits, and enjoys good health.

June 5th.—The patient is plumper, and considerably taller, since adopting the horizontal supine position. Her face having become florid, open, and juvenile; she preserves her excellent figure and good health; appetite, bowels, and menses are regular.

After a further period of ten months she has become completely restored, by the process adopted, from hideous deformity and strongly marked precursory symptoms of pulmonary consumption. The latter having made considerable progress towards the second stage; but began to abate (as evidenced in other cases,) after commencing this treatment.

April 1st.—This young lady living constantly abroad with her mother, I had not the pleasure of seeing her for twelve years, but she was seen by some friends in their travels, who state that she is very lively, looks well, and enters freely into the amusements of the places where she resides.

CASE III.

A CASE OF INEQUALITY OF THE LOWER LIMBS, DEPENDENT ON SPINAL CURVATURE, AND CURED BY REMOVING THE CURVE.

This patient came to me moving on crutches, with *one leg three inches and a half* longer than the other. She had been recommended by one of the most eminent surgeons to have fitted a heavy instrument to the projecting limb, but *who never looked* (as I am informed) *at the back*, where the seat of the disease was. I found, on examination, a decided lateral curve in the lumbar region of the spine, elevating one hip and depressing the other. This curvature was so apparent to her friends, when I directed their attention to it, that they immediately confided her to my care.

By the usual practice of recumbency, friction, elongation, and machinery, the back-bone soon became straight. The two sides of the pelvis (hips) were parallel, and from that time the inferior extremities were exactly of the same length; a convincing proof, that the variation in the length of the legs was the consequence, and not the *cause*, of the lameness.

Some few months after, this young lady's parent visiting the metropolis, upon seeing her daughter's improvement exclaimed with ecstasy:—"This is indeed nature's perfection!" The patient returned home, where she continues to enjoy excellent health, with the perfect and entire *command of her limbs.*

CASE IV.

A CASE OF A PARAPLEGIC PATIENT, WHO HAD LOST THE ENTIRE USE AND FEELING OF HER LOWER EXTREMITIES, CURED.

Miss M. H., aged 13 years, came under treatment in June, 1834. Sanguine temperament, lax fibre, and with her left leg one inch longer than the right. She had entirely lost the use and feeling of her lower extremities: neither strong friction nor a smart stroke upon the sole of her feet caused any sensation: they were always cold, the skin mottled and of a dull hue. She had been previously under the treatment of an experienced surgeon, who stated that "when the toes were insensible and without motion, he had never witnessed a cure." The back, upon examination, *which no one had previously examined*, presented the dorsal vertebræ twisted towards the right side, and the ribs in the same direction, forming an elevated wreath. The lumbar hollow was not only obliterated, but the spine projected. The displacement or subluxation of so many vertebræ compressed the spinal cord, and thus prevented the natural communication between the brain and the nerves of the paralyzed limbs; thus the will had lost its power over the paralyzed parts, and impressions could not be conveyed to the sensorium.

By correcting the deformed spine, this patient soon regained her feeling, which at one time became so morbidly acute, that she shrunk from the touch; but after a few weeks, it assumed its natural equilibrium, and has remained so.

In less than a month, a very slight action was perceptible, first in one foot, and then in the other; the motion of the limbs having kept pace with the improvement in the back.

February, 1835.—The natural figure of the spine and the action of the limbs being completely restored, the primary treatment was discontinued, and friction, &c., only applied.

April 2nd.—The patient was this day allowed to rise from her couch and take a short walk, which she performed with ease, and without feeling inconvenience from the exertion. Although she had remained constantly on the crib nine months, she experienced no difficulty in leaving it, nor uneasiness from reassuming the erect position.

This case adds its evidence towards establishing the fact, that the cause of paraplegia is in the spinal cord, and that the old notion of its proceeding from the brain is a fallacy.

CASE V.

CASE OF PARALYSIS OF THE ARMS AND THE LEGS, DEPENDENT ON SPINAL CURVE, REMOVED BY REMOVING THE CURVE.

The Rev. Mr. ———'s case is highly instructive, in relation to the effects of spinal curvature. Mr. ——— had fallen from a vicious horse, and was pronounced, before coming under Dr. Harrison's treatment, "crippled for the remainder of his days."

With reference to thus giving hasty opinions, it will be as well to record Dr. Hoffmann's admirable reply to a friend who was in search of a medical adviser:—"Give your preference to the physician who bestows most time, and takes the greatest pains to make out the disease, before he ventures to direct the method of cure."

Had this patient's spine been examined, the curvature could not have escaped detection; the hip joint was perfectly sound, and the curvature of the spine forced the pelvis downwards on one side, and raised it equally on the other. The only surprise is that the actual cause should have been so long overlooked—an overlooking which caused a most cruel attempt to cure, namely, placing the legs in irons, as if the party was a criminal. It is a fact, though not generally known, that, *in almost all cases of curvature, one leg always appears longer.* The spinal column presented two considerable curvatures, one between the shoulders, the other in the loins. The patient was suffering from paralysis of the arms and legs, with the sense of feeling and his general health much impaired. The breath very offensive, appetite trifling and irregular.

By removing the curvature, he recovered the use of his arms and legs; the extreme offensiveness of breath disappeared, and his appetite returned. He regained his general health, and was ultimately enabled to resume his duties.

CASE VI.

CASE OF SPINAL CURVATURE, AFFECTING THE RESPIRATORY, DIGESTIVE AND UTERINE SYSTEM, CURED, WITH DISAPPEARANCE OF THE SYMPTOMS.

Miss D., who, at the age of 11 years, was forcibly pushed into a saw-pit, having at that age not yet recovered from a previous injury—having been, to save her life, thrown out of a carriage upon the foot-pavement. When at fifteen years of age her spine was examined, it was found that the spinal column had given way in its entire length, having besides the double lateral curvature other great curvatures, each vertebra being displaced. The ribs, on account of their strong attachment to the vertebral pillar, were also much displaced at their sternal (breast-bone) ends; the clavicles (collar-bones) and scapulæ (shoulder-blade bones) were, in consequence, sensibly removed from their primitive stations. The trunk was reduced in length, and equally augmented in circumference, and consequently the organs of the cavities of the chest and abdomen being displaced, infirm health followed.

In this case every internal function had been impeded for years; constant difficulty and shortness of breathing, increased by the slightest movement of the body, or the least agitation; sneezing often attempted, but could be seldom effected. Constant dry cough. The heart beat irregularly and violently against the bony walls of the chest; appetite depraved, uncertain—defective; pulse small and weak; bowels generally constipated. The menses never appeared. As the spinal column recovered its position, the ribs attached to the sternum, the clavicles and the scapulæ recovered their proper positions. By this restoration, the trunk became much elongated and naturally shaped. Among the happy results of this important change in the bony structure, the patient became taller and transformed into a beautiful figure, and the internal organs being repositioned, their regular healthy functions again manifested themselves.

CASE VII.

SPINAL CURVATURE, ATTENDED WITH COUGH, CURED.

Miss W., who suffered from a posterior, and a slight lateral curvature of the cervical and dorsal vertebræ, had, until she came under this treatment, (with other symptoms,) an incessant "tickling" cough, which disappeared before the patient had been under treatment two months.

CASE VIII.

SPINAL CURVATURE, CAUSING COLDNESS OF THE LEGS, CURED, AND THE COLDNESS CEASING.

Another patient, suffering from *lumbar* curvature, always complained of great *coldness* in the legs and feet. The natural temperature was restored, after being under treatment but a short time.

CASE IX

CASE OF OUTWARD CURVATURE, ATTENDED WITH AFFECTION OF THE HEART AND AFFECTION OF THE SIGHT, CURED.

Mr. C. D., aged 24 years, of a delicate habit, has been a long time indisposed. He is subject to severe palpitations of the heart, from apparently slight causes, great tightness over the stomach, and want of appetite. He swallows with inconvenience, and reading aloud soon tires him. The eye-sight has gradually got worse for several years past. He used to amuse himself with gardening, but has been obliged to desist, because, on stooping, his face became uncomfortably swollen, remaining red for a long time afterwards. He also felt a dull heavy pain in the upper and inner part of his head. He suffers great uneasiness in the right side, whenever even slight pressure is made on the edge of the ribs, or immediately below them. The false ribs on that side are flat and protuberant ;

the liver has, in consequence, been forced upwards, and driven out of its proper situation. He has an aversion to common diet, liking fat meats, butter, or food prepared with warm condiments. The left arm is very weak, and often nearly insensible. The lower limbs are numb and cold; they are subject also to clammy perspirations and convulsive twitchings. Bowels constipated; urine very turbid, of extraordinary colour, and disagreeable smell; pulse frequent; the whole of the spine between the shoulders is considerably arched, and rises so much above them as to be quite unsightly. The small of the back is unnaturally hollow. This prominence is occasioned by the subluxation of three of the cervical, and five of the upper dorsal vertebræ; all of which are tender, stand irregularly, and at unequal distances from each other. He imputes his complaint to the fatigue of riding on horseback when in weak health, when he fainted frequently from the exertion. He has consulted several medical men; no two entertained the same opinion of his case; some declared him to be consumptive, and recommended a mild climate; others referred his disorder to the liver, and others to the stomach.

May 5th, 1820.—The eight vertebræ, already described, have been, for some time, restored to their natural situations. The curve is entirely removed, and the part sunk into a groove of nearly an inch in depth below the shoulders. The hollowness in the loins is not more than natural. The spine, in consequence of these alterations, is become straight and remarkably well shaped. The ribs on the right side now resemble those on the left. The palpitations have entirely ceased, and the tightness of the stomach is removed. The weakness and the numbness in his arms and legs are no longer experienced. Has not lately had spasms or clammy sweats, and the feet are much warmer. His looks have considerably improved, and the urine is natural. He has taken a dislike to fat in every way, preferring lean meats, with a proper mixture of vegetables. His diet is natural, and appetite good.

July 20th, 1820.—He is quite well in health, and feels his back gaining strength daily. The liver having regained its natural situation, the tenderness formerly mentioned is nearly gone; it had constantly troubled him for the last ten years.

September 18th, 1820.—The eye-sight is entirely restored. Deglutition is easy, and reading aloud no longer fatigues. He returned home in very good health and spirits.

November 29th, 1820.—The tenderness over his liver, and all the other complaints, have entirely left him; he has lately ventured to take walking exercise in the open air. This recreation is performed with ease, produces no fatigue, or uneasiness of the back.

July 10th, 1821.—The patient continues to enjoy good health. He, unaided, walks about daily in his father's park.

December 17th, 1824.—This gentleman went from under my care into a distant county, where he has subsequently resided. My information concerning him has been neither frequent nor circumstantial. According to the last account he continues to look well, enjoys the exercise of walking, and occasionally performs service in his parish church.

CASE X.

CASE OF OUTWARD CURVATURE, ATTENDED WITH SHORTNESS OF THE LEFT LEG, CURED.

Master G. A., aged 13, of a florid countenance and fair complexion, leans towards the left side at all times. The left lower limb is nearly two inches shorter than the right. To obviate this defect, the shoe sole is stuffed with

Fig 1

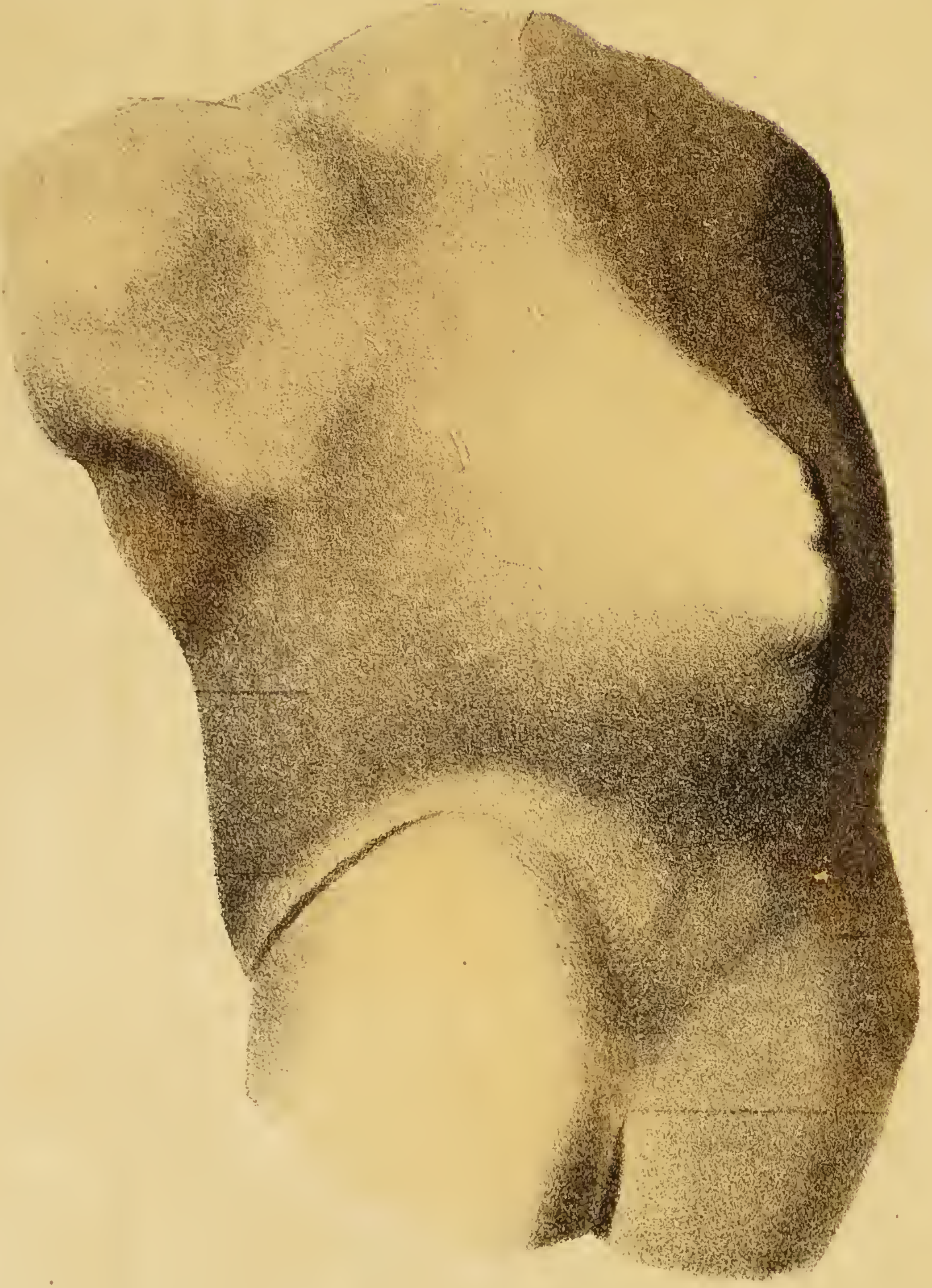
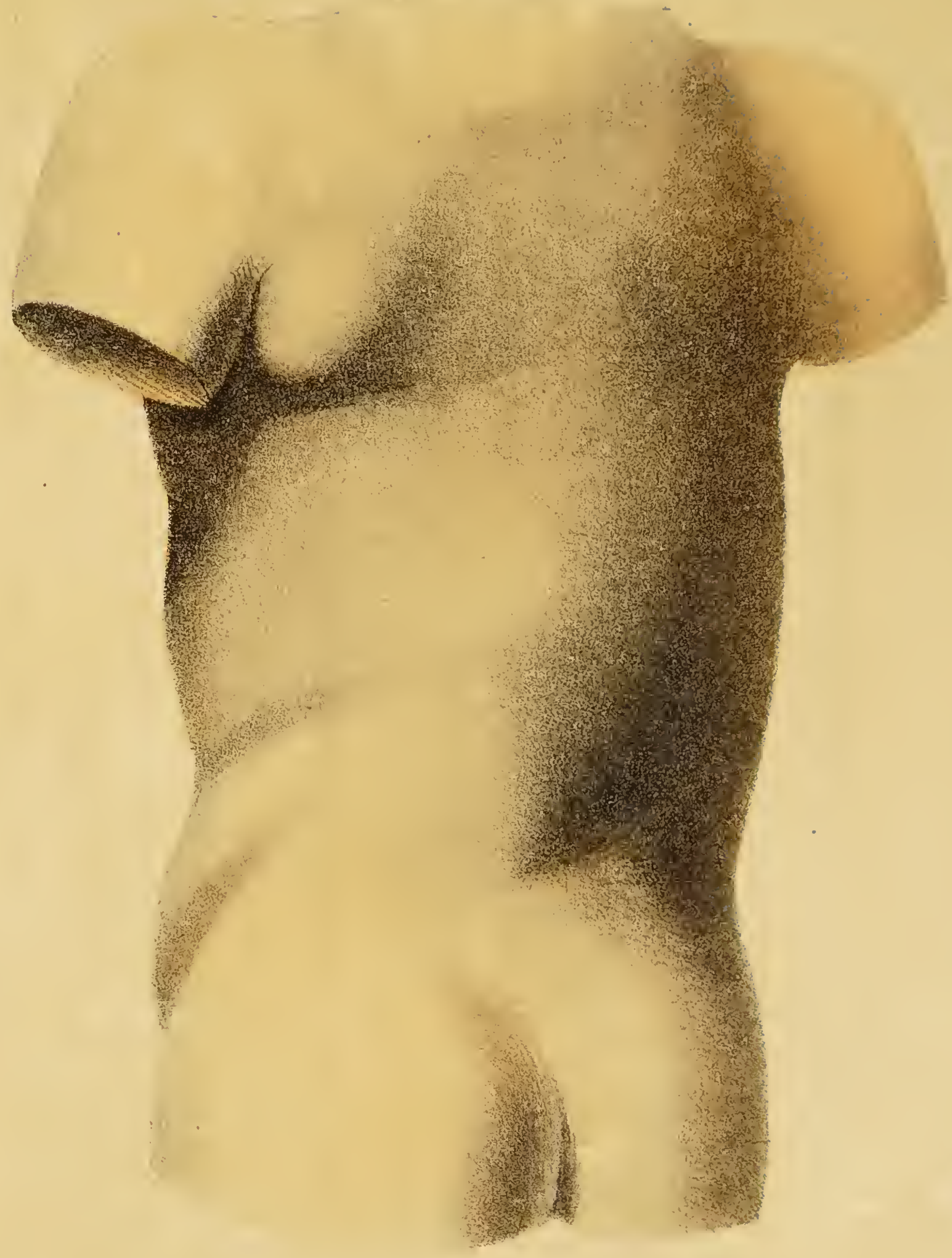


Fig 2



leather. He is obliged, in walking, to make use of both a crutch and a stick. Eight years ago, he was struck with a stone on the false ribs of the same side at a considerable distance from the spine. He was much hurt, and being unable from anguish to raise himself the next morning, a surgeon was consulted, who advised an embrocation to be applied. The pains were relieved for a few days, but soon returned with equal violence, and extended from the part affected to the bottom of the foot, and have continued to the present time, with little variation or abatement. He has lately been subject to frequent attacks of numbness, which always begin in the bruised part, and proceed from it along the same side to the sole of the foot. Many different remedies and applications have been tried, but to no good purpose. About eight months after the accident, one of the lower dorsal vertebræ was discovered to project a little. The eminence was at first scarcely perceptible, but increased gradually; other vertebræ following, the swelling has been enlarging ever since. He is soon fatigued, and easily put out of breath. The heart always palpitates violently, and the apex, having been forced out of its natural situation, beats regularly under the third rib. He sleeps well; appetite good; urine and alvine motions natural; has a very aged appearance.

On examination, the heads of eight of the upper dorsal vertebræ were found too prominent, and gradually rising, like an inclined plane, towards the hump. The remainder, with the connected ribs, had formed a large elevated swelling, (see plate x., fig. 1,) inclining towards the right, seven and a half inches long, six and three quarters broad, and three inches high in the part most raised. Three of the upper lumbar vertebræ assist in forming the lower part of the deformity. The ribs, at their sternal attachments, are very irregularly fixed, and huddled together, especially on the left side, so as to contract the chest in front, and give it an unnatural appearance. The margin of the ribs on the same side nearly touches the pelvis, (see plate x., fig. 1.) He is four feet in height, and while he measures *twenty-eight inches* round his body, at the middle of the hump, his back from the cleft between the buttocks to the nape of the neck, measures *seventeen and a half* inches. The affected limb, when stretched out, always becomes numb for a short time, and afterwards has a prickling sensation, first in one part, and then in another.

January 31, 1821.—His spine is elongated more than two inches, and the height of the hump is reduced from three inches to one and a half. Both legs have become nearly equal in length, and the hollow on the left side is almost obliterated. The chest is greatly improved in its external form and appearance; his heart beats much less, and re-occupies nearly its proper place. The health is very good, and his countenance has become juvenile.

April 10, 1821.—Length of the hump, at first seven inches and a half, is now reduced to four and a half; breadth, at first, six inches and three quarters, is now four inches.

August 10th, 1823.—A gradual detumescence has been observable ever since the last report. What remains, is only perceptible on viewing the naked back; it cannot be discovered through a tight waistcoat. The heart has entirely recovered its proper place, and his lower limbs are exactly of the same length. He has *grown ten inches* since he first lay down, is much plumper, and in excellent health. The circumference of his waist is at this time only twenty inches, though it was full twenty-eight immediately before the treatment began.

November 29th, 1823.—The patient has, from an early period of the process, enjoyed uniform good health; he walks quite erect, is very grateful for the recovery of his figure, (see plate x., fig. 2,) and the opportunity now afforded him of filling a useful station in society.

CASE XI.

CASE OF LATERAL AND OUTWARD CURVATURE, CURED.

Mrs. A. B., aged 26, of a sanguine temperament, complains of great and long-continued weakness in her back. Upon examination, the third, fourth, fifth, and sixth dorsal vertebræ were much displaced, and projecting backwards in the form of an arch. On slightly touching the skin on the right side, near to the projection, she suffers a painful sensation, which always goes off when greater pressure is used. Upon coughing or sneezing, she constantly experiences a distressing tightness across the chest. Going up and down stairs always, and walking generally, produce great difficulty in breathing. She is liable to faint from slight exertion. Occasionally some pricking and numbness are felt in the right foot for a few minutes. Little pain or tenderness is excited by pressing the spines or bodies of the vertebræ, nor does there appear to have been any inflammation in them. She first discovered a small projection in the back, about six years since. This being unaccompanied with pain or tenderness, she continued to disregard it, under a supposition that nothing could be done for her relief; though she knew that the enlargement kept increasing, and that her height was visibly diminishing. From this time exercise soon produced fatigue, she suffering most in the trunk. She spent six weeks, in the spring of 1817, in a constant round of fashionable amusements; in which time the weakness of the back was so much increased, that a physician and a surgeon of the greatest eminence in London were consulted. Four dorsal vertebræ were discovered to be much displaced, and the medical gentlemen said they could only be cured by union of bone (anchylosis.) To induce this union, caustic issues were inserted. A recumbent posture, according to Mr. Baynton's plan, was then adopted, and the diseased arch covered with emplast. galban. comp. Tonic and aperient medicines were also directed. This latter mode of treatment, though never strictly followed, has been persevered in for the last fourteen months without any benefit.

October 14th.—Several weeks unavoidably interposed between my first consultation and commencement of proceedings, on November 26th.

December 5th.—The two uppermost of the affected vertebræ have already sunk down, so as to leave a great hollowness between them and the two lower ones. The distressing pain in the skin, formerly mentioned, is nearly gone; nor has the patient lately suffered much uneasiness from the right foot.

March 21st.—The lowest vertebra in the curve recovered its natural situation six weeks since, and the other three are much fallen. The pain on the right side of the incurvation is quite gone. She no longer experiences any inconvenience from coughing or sneezing. The difficulty in breathing and the disposition to faint have entirely left her, as well as the tightness over the chest and stomach.

May 12th.—The two upper bones of the arch have obtained their proper places, and have been stationary for the last two or three weeks.

July 23rd.—All the bones are restored to their natural places, leaving little prominence or other affection of the spine.

September 20th.—She has been permitted lately to rise from her mattress and walk about the room for a quarter of an hour before and after dinner. She moves with ease, and finds no inconvenience from it. The health is extremely good.

October 20th.—On returning home after an absence of some months, her friends were particularly struck with her improved appearance, and declared her to be considerably taller than at any former period.

This opinion leads to a belief that the disorder began earlier than the time above stated.

September 30th.—The lady continues in very good health in every respect. The spine remains quite sound and well. Walking and carriage exercise afford her great pleasure, and are pursued without fatigue.

Some years after.—Mrs. A. B. continues in good health, and has, for several years, participated in the amusements of her age and station.

Mrs. A. B. has regularly visited London every spring, and entered into its various amusements. She remained in excellent health till Midsummer. About that time it was her misfortune to be seized with an inflammatory complaint, which brought her life into great danger, and left her in a state of extreme debility. She was carried, on her recovery, to the sea-coast late in August, and has continued there through the winter. She left her maritime residence this month, having recovered her former strength and rosy complexion.

The health of this lady is again entirely restored. Before dismissing the case, it is of importance to remark, that, since the spinal treatment was relinquished, the patient has been afflicted with two very severe and tedious fits of indisposition, attended with much fever. Her constitution being extremely weakened in both attacks, convalescence was proportionably slow. It required, in the former, a long abode near the sea; in the latter, a regulated temperature for many successive months. During these illnesses, and perhaps even before their invasion, the ligaments, from inattention to the prescribed rules, had partially given way, and suffered some of the vertebræ slightly to protrude again.

Deduction.—This lady afterwards perfectly recovered: a result which demonstrates the non-necessity of attempting to fix bones in their displaced positions by causing, supposing it could be caused, the bones to grow together, and thus produce a permanent deformity.

CASE XII.

CASE OF OUTWARD AND LATETAL CURVATURE, WITH LOSS OF POWER IN THE LOWER LIMBS AND PARTIAL LOSS IN THE UPPER, CURED.

Mrs. W., of Hemel Hempstead, aged 40, was thrown out of an open carriage, with great violence, upon her face and elbows, in August, 1817; she was much bruised, but felt no particular inconvenience, till March, 1819. During this time, her shoulders were observed to grow more prominent, and to be accompanied with a marked depression in the upper and the fore part of the chest. She has been a severe sufferer ever since, and has taken many medicines without obtaining any relief.

The case was, for a long time, supposed to be rheumatics, and treated accordingly.

In the spring of 1820, she consulted a very experienced and highly respectable surgeon, who said she was suffering under a disease of the spine; that several of the vertebræ were decayed; and added, that there existed not the smallest prospect of permanent relief. He recommended, amongst other things, the insertion of caustic issues near to the part most protuberant. His directions were neglected, owing to the despondency of her medical attendant, who substituted blisters, and never had recourse to issues or setons.

Mrs. W. has little use of the upper, and none of the lower limbs; to herself they always feel heavy, cold, and numb; though to other persons, they are sometimes cold, at other times hot. She is unable to bend her back in the smallest degree; nor can she, when lying in bed, turn herself to either side. The weakness of her limbs and back came on imperceptibly, and has increased very slowly. It was more than two years after the accident occurred, before she was entirely deprived of all power in either the back or the inferior extremities. Appetite has lately declined, and her liver has often been affected; the latter complaint is discovered by looking at the countenance, which is at these times dull, sallow, and of a yellowish brown. The urine is frequently turbid, with an ammoniacal smell; motions dark coloured and offensive; menses are of a brown or greenish hue, and emit a disagreeable odour; pulse weak, and of moderate frequency. The dorsal vertebræ and the ribs, by their extraordinary prominence, form an unsightly convexity or gibbous swelling. The third, fourth, fifth, and sixth, in particular, appear considerably higher than the rest, forming the arch of a small circle, and their spinous eminences bend a little towards the left. Owing to this partial turn, the transverse processes may be distinctly felt on the right side. The dorsal convexity has produced a disagreeable hollow in the small of her back, with a corresponding fulness of the abdomen. There is not, and never has been, tenderness in any part of the spine.

November 4th, 1823.—The arms and the legs have acquired *more feeling*, a better colour, and their natural warmth. She can already move her arms freely, and her toes a little. The back is less arched; only two of the four irregular vertebræ appear above the rest. The means of cure above recommended have been daily repeated since last report. A shield was this day placed over the most prominent vertebræ—November 16th, 1823.

November 28th, 1823.—The contour of the spine is entirely restored, with the exception of the fourth and fifth dorsal vertebræ, which still project a little; their tranverse processes continue partially depressed, and turned towards the left side; those on the right side may be easily felt. She has recovered the faculty of moving her hips, knees, ankles, and toes, with some degree of freedom. The left leg has, from the first, been weaker, and continues more infirm, than its fellow.

December 8th, 1823.—Besides bending the lower extremities with greater facility, she *can now draw them upwards*, and *push them back* with some degree of force.

December 10th, 1823.—Each day since last report has been marked with increased power in the lower extremities; she moves them with great freedom and ease in every direction. The proper form of the back is entirely restored, except where the two vertebræ above mentioned have raised the skin into a small circular tumour.

December 31st, 1823.—The patient continues in excellent health, has a good appetite, and sleeps well; moves her limbs with facility in every direction; can not only pull them up and push them down, but crosses and draws them back again, without the smallest difficulty.

January 28th, 1824.—The strength and the activity of the lower extremities have lately increased. She can elevate and depress her chest and belly with great ease. The projecting vertebræ are lower. Her countenance is much improved.

January 30th, 1824.—The two vertebræ formerly described still remain slightly raised. In all other respects the spinal column has recovered its lost figure. The menses and the urine have regained their natural characteristics. She is in excellent health and spirits; was this morning assisted from her couch, and walked about in the room for ten minutes with great ease, and strength in her lower limbs.

She was permitted to return home this day, on condition that she agreed to maintain the horizontal position, until the ligaments of the spine had entirely recovered their lost tone and vigour.

April 17th, 1824.—Mrs. W. has enjoyed good health since her return home, and looks better. Her back has gained strength, and is rather flatter. She feels stronger in her limbs, but has remained constantly on her couch.

February 14th, 1827.—In a letter received from Mrs. W., in answer to my inquiries into the present state of her health, she complains only of catarrh and slight rheumatic pains.

Deduction.—Here again is presented an evidence of the dependence of a want of motive power in the limbs on the side of the spine; and also of the dependence of the deranged state of the various excretory organs upon the same. No medicine could have cured these. The spine made straight, all the symptoms disappear.

CASE XII.

CASE OF OUTWARD CURVATURE, ATTENDED WITH SOME EXTRAORDINARY SYMPTOMS, CURED.

Miss E. F., of sanguine temperament, complains of great pains in her loins whenever she is raised from the horizontal position. The experiment is no sooner attempted, than she is violently convulsed in her arms and legs, upwards and downwards. These agitations suffer no abatement so long as her back is elevated, in however small a degree, from the couch. Her eyes, the rest of her features, and indeed the whole countenance, are frightfully disturbed on these occasions. Not a single muscle of the body seems to be at rest, so extensive and varied is the commotion. She finds neither relief nor mitigation of her sufferings, however long the conflict is protracted.

The moment the elevation is discontinued, and her back again feels the crib, the spasms cease, and the countenance resumes its former tranquillity: she becomes composed, cheerful, and easy. The transition is so instantaneous and striking, that it appears more like magic, than the effect of any natural cause.

Appetite greater than when in good health: digestion is always accompanied with a redness and flushing heat in the face: whether awake or asleep, she feels indescribable uncomfortableness. The lower limbs are always clay cold, nearly insensible, and subject to frequent twitchings; but capable of very little voluntary motion. She is much troubled with indigestion, and with a cough, which is supposed to threaten consumption, and also with a sense of stricture over the stomach. Pulse, bowels, and menses are pretty regular.

For three years previously she had been in delicate health, arising, it was supposed, from a diseased liver, and took large doses of mercury for its cure. Walking, riding, dancing, or sitting long at table, produced great fatigue, which was always most felt in the higher part of the loins. The day after dancing, or using other strong exercise, she was always obliged to remain constantly in bed. Travelling in a carriage was productive of very great inconvenience, not wholly subsiding for several days. Besides tenderness, there was the sensation of stabbing, sometimes in one part of the spine, sometimes in another. The pains in the lower limbs were often more severe than those in the spine. After continuing the horizontal posture six weeks, she found herself worse than at first. She was nevertheless advised to continue it for twelve months. At the end of that time she tried to get up, but found herself in a much more helpless and distressed condition than on first lying down. She could with difficulty bear to be erect even for a few minutes at a time, though supported on both sides. Her sufferings being referred to general debility and disuse of her limbs, she persisted in taking exercise, till the repetition of it became intolerable, even when continued for a few weeks. After an unavailing struggle of several weeks, she returned to the horizontal position, in which she has been obliged constantly to remain. Every effort to leave the couch invariably produced not only agitation, and a most distressing contraction of countenance, but also an aggravation of her malady for many successive weeks together, with a troublesome headache, sometimes accompanied with nearly a temporary deprivation of her eyesight and hearing.

The first four years she occasionally had leeches and blisters applied to the back, by direction of her physician. Afterwards the late Mr. Baynton advised a simple recumbency, and his advice was strictly followed more than six months. At the conclusion of this treatment, the patient made another ineffectual essay to leave the crib. She then consulted a different surgeon, who subjected her to the constant torment of caustic issues, and stimulating dressings, during the period of nearly two years.—June 9th.

Finding no relief from any of the modes recommended, she was at length induced to consult me.

On examining her back, the whole spinal column, except two vertebræ, appeared too elevated.

All the dorsal bones now project singly, and stand too prominent. The first lumbar had, on some former occasion, sunk down full half an inch below the level of the continuous vertebræ, and was nearly buried under the last dorsal. The second lumbar projected considerably, and was partially driven towards the left. There was a corresponding vacancy on the right side of the spine.

The next vertebra below was also rather depressed; the remainder manifested nothing extraordinary.

By my advice, Miss E. F. has had her spine stretched and pressed in the usual manner, every day since the last report. She has also worn a firm belt, and, for the greater part of the time, next to her back, a wooden shield, properly constructed and well stuffed. Her loins rest upon a firm pad put under the shield. All the dorsal and lumbar bones have already sunk considerably. The natural hollowness of the loins is nearly restored. The two depressed bones have visibly risen. The intermediate one is sensibly sunk, and nearly in a line with the rest of the vertebral column. The distressing uneasiness left her soon after the commencement of the new process. She is become constantly cheerful, and sleeps well Appetite natural, and digestion no longer produces any increased heat. The limbs are warmer, more sensible, and admit of being freely moved.

On the day of my first visit, which was at the end of last May, she, on being raised a little from her crib, became tremulous in every limb, and immediately afterwards violently convulsed in them, and in every feature of her countenance; so that after enduring these painful commotions a few seconds, she was, at my desire, replaced on the couch. During my third attendance, she was more elevated than on the former occasion, and remained longer in that position without experiencing any uneasiness, except slight pain in the first lumbar vertebra. Last Sunday she was put into the sitting posture, with her legs hanging from the couch. After remaining in this situation about five minutes, without suffering the slightest pain, convulsive agitation, or inconvenience in the back, she was again laid down.—July 19th.

November 6th.—All the projecting vertebræ are sensibly fallen, and have apparently regained their natural situation. The first and third lumbar are visibly risen. The spinal column has in consequence a more natural appearance, and the chest in front looks much better. She was this afternoon assisted from her couch, and permitted to walk about in the room for five minutes, a pleasure which she had not enjoyed for nearly seven years. She was placed on the couch, without having sustained the smallest inconvenience.

Though the stretching and the pressure were omitted after the last report, recumbency was strictly observed until May following, and is still submitted to, more or less, every day. The friction has also been persisted in.

Miss E. F. did not discontinue her daily walks before the end of December, and was generally on foot several hours together, without suffering any fatigue. After remaining some time erect, or on bending the head forward, she was always seized with violent pains, which appeared to begin in the neck, and to shoot upwards to the top of the head. Lying down soon removes them. Upon viewing the back again, at this time, I found the spinal column, between the upper part of the shoulders, too much elevated, and standing considerably above the scapula. This defect in the vertebral arrangement was unfortunately overlooked by myself and her other medical attendants, twenty-nine in number. The headaches with which she had been tormented were, by all of us, imputed to other causes. No proper means were therefore employed to reinstate the vertebræ. It was owing to displacement, as I conceive, that the nerves, arising out of these parts, became disturbed in their passage through the notches of the vertebræ. Whenever they are interrupted in this manner, the bad consequences do not show themselves at the spinal end, but in their ramifying terminations.

Miss E. F. having determined, in order to relieve herself from this distressing uneasiness, to apply the same treatment to the upper part of the back, which had proved successful in restoring the lumbar vertebræ to their proper position, it was accordingly this day commenced, August 18th.

October 16th.—The process has been repeated every second day from the date of the last report. The health is not at all affected by it. The spine being restored to its natural figure, the treatment is to be discontinued from this day.

Stimulant frictions were regularly applied to the spinal region, and undeviating recumbency carefully observed to the 1st of February. On this day, the patient again left her crib, and began to resume her walks. At their commencement, the exercise was, as formerly, limited to a few minutes daily. No headache or other inconvenience followed, though it was gradually extended to more than half an hour at a time. She had the misfortune, while walking alone in a room, to fall down suddenly in a fainting fit. By this accident, three of the lower cervical, and as many of the upper dorsal vertebræ, were again displaced, partly outward and partly in a lateral direction. To relieve herself from the effects of this new calamity, she resolved to adopt the course, which had already succeeded so well in restoring her bodily health, and this was persevered in till December 20th. At this period, all the prominent vertebræ being replaced, the treatment was discontinued. Recumbency, with stimulant frictions and mechanical pressure, were strictly observed till April.

The patient left her couch May 16th, and walked in her room with great ease for a few minutes. The exercise has been daily repeated, gradually enlarging the periods. She is now on foot two hours at a time, either walking or standing. She has suffered no return of headache, nor has her countenance been at all agitated, since she discontinued the horizontal position, in the manner described. —July 16th.

Since the last report, Miss E. F. has continued her daily walks, and extended them to three or four miles in every direction. She has also been upon an excursion into the country. Her health and appearance have greatly improved, nor does she experience any inconvenience from the erect posture, or from being on her feet several hours together.—March.

CASE XIV.

CASE OF OUTWARD CURVATURE, ATTENDED WITH MANY DISTRESSING SYMPTOMS, CURED.

Miss R., aged 36, has great difficulty in walking even short distances, stumbling even on level ground. She constantly stoops, and cannot raise herself upright or remain without assistance in the erect position. The countenance is of a dull yellow, is contracted, careworn, and exhibits the appearance of great age. Appetite small, digestion imperfect and variable, pulse weak, urine generally turbid, and emits the ammoniacal odour; bowels constipated, the stools are dark coloured, and impart a sulphureous smell; menses return at regular periods, abundant in quantity, resemble tar in appearance, and are highly offensive. She is often troubled with sharp and transient pains in her right leg. She is uncertain as to the cause and the duration of her disorder, but is of opinion that it com-

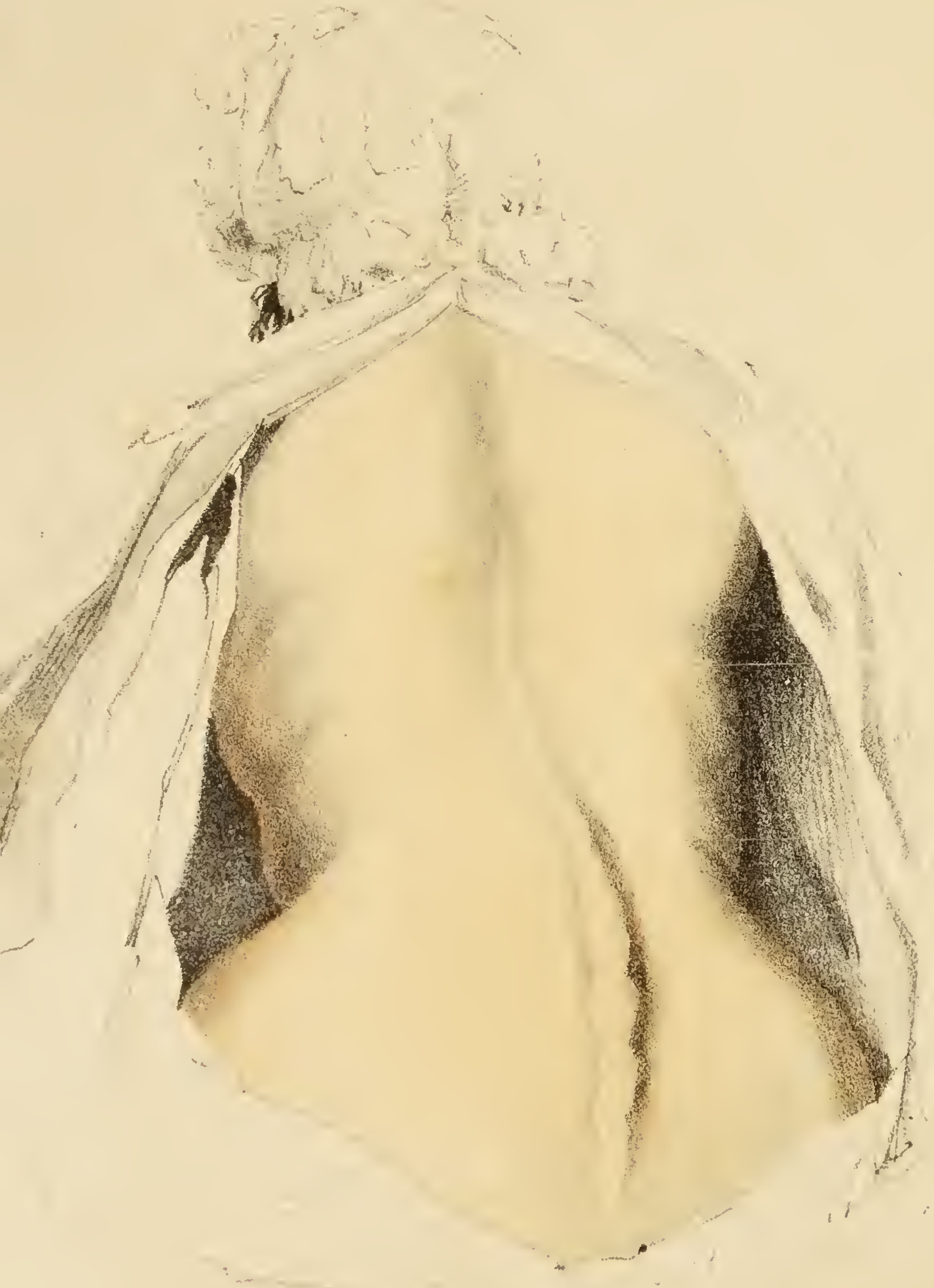
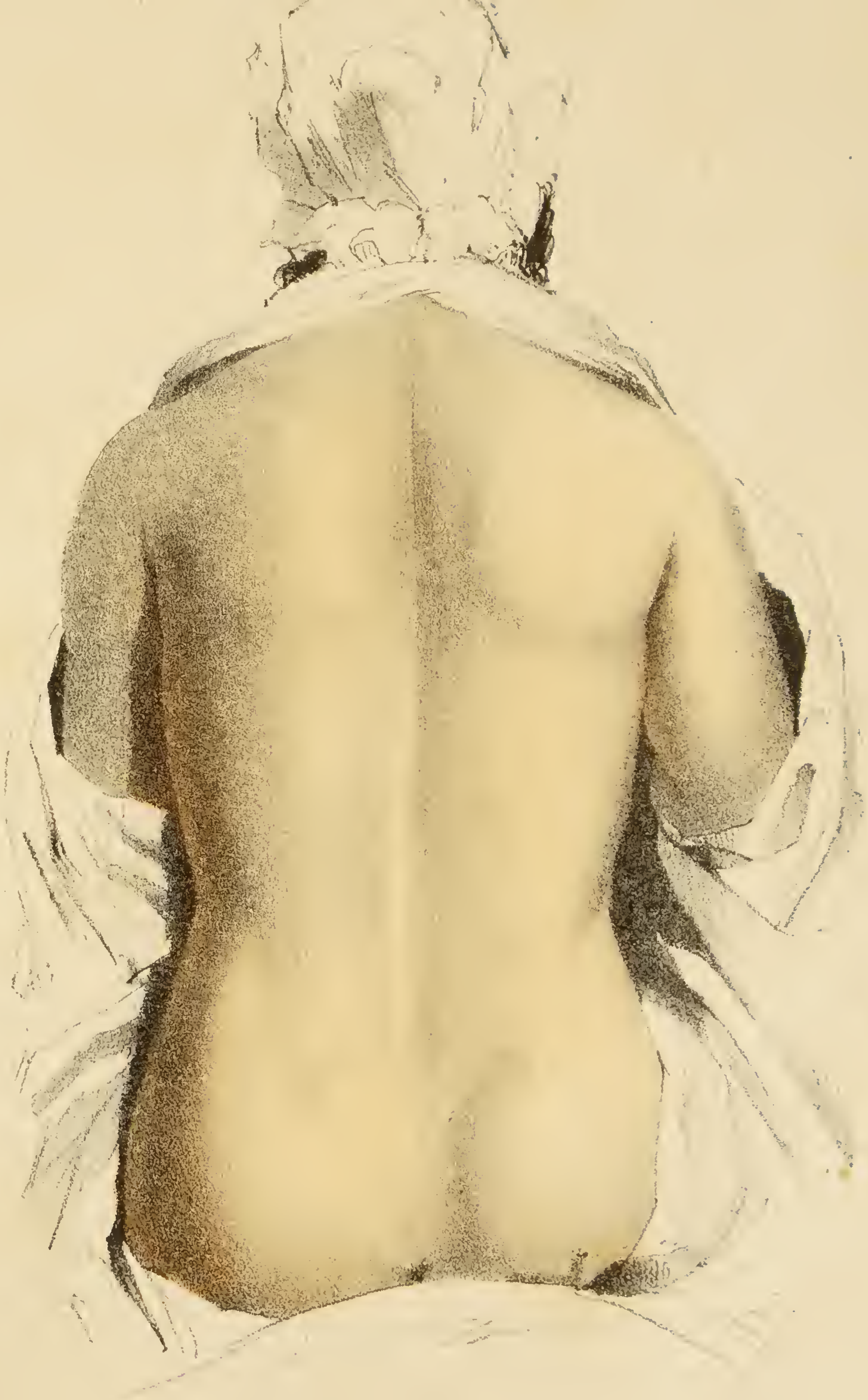


Fig 1



menced more than twelve years since, soon after falling down stairs. Change of air to the sea-side and other places has been tried, but affords no relief. Medicines of various kinds and regulated diet have been equally unavailing, though persevered in during the whole period of her indisposition. On examination, all the dorsal and lumbar vertebræ were more or less out of their situations. (Plate XI., fig. 1.) The former are irregular in their distances from each other, and in their relative height. The two last dorsal, and all the lumbar bones, combine to form a considerable posterior and lateral curvature towards the right.—Dec. 23rd.

March 25th.—The whole spinal column is visibly increased in length, and much improved in general appearance, the back having, in a great measure, recovered its natural arrangement. It is already a little grooved and depressed, where formerly it was raised into a considerable ridge. The small of the back, having recovered some portion of its natural hollow, exhibits a striking contrast to its late unsightly elevation. Her countenance has become open, fresh coloured, and juvenile; appetite and digestion much improved; her urine, fœces, and menses are natural and regular.

August 7th.—The vertebræ were declared at this visit to have regained their natural places (plate XI., fig. 2,) and her health is entirely restored; she is permitted to walk a short time every day, which she does with great ease, and an erect mien; she has no longer any difficulty in standing upright, and is considerably taller, as well as much improved in her personal appearance.

June 6th.—The patient has hitherto enjoyed an excellent state of health, with the exception of a few slight attacks of catarrh.

February.— She has possessed uninterrupted good health since the last report.

DEDUCTION.—This case shows how much the beauty of the face and the clearness of the complexion depend upon the state of the spine.

CASE XV.

CASE OF OUTWARD CURVATURE, ATTENDED WITH PALPITATION, DIFFICULTY OF BREATHING, TIGHTNESS OF CHEST, HYSTERIA, AND OTHER ANOMALOUS SYMPTOMS.

Miss P. is unable to stand or sit erect, even for a single moment, unless supported. She walks with great difficulty, requiring the assistance of a stick, and the arm of a friend, in consequence of the great debility, and the little power that she can exert in moving her limbs. The whole spine is tender to the touch, and bends outwards like a hoop, whenever the weight of the head and trunk is placed upon it either in walking or sitting erect.

On lying down, which is her only easy position, the spine immediately recovers its natural figure, and she then possesses the free use of her lower extremities.

She is almost constantly tormented with aching shooting pains in the *back of the head* on the left side, which leave the scalp tender to the touch. The nervous system is so delicate, that the slightest causes produce palpitation, dyspnæa, sighings, tremors of the limbs, agitations, and not unfrequently hysteria under various forms. The countenance appears dull and sallow; her sight, after a few minutes' exercise of her eyes, becomes indistinct, as if a dark object was sailing before it. She has seldom any appetite, and digestion is greatly impaired. The bowels are commonly torpid, and the menses return at uncertain periods.

On careful examination, no irregularity, inflammation, fullness, or other derangement of the vertebral pillar was discoverable. A tenderness, apparently confined to the spinal ligaments, very severe, and extending to every part of the column, was the prominent feature.

The complaint is of *fourteen years'* continuance; it followed a protracted typhus fever, which seized her at the age of fifteen, and so reduced her, that upwards of three months after its disappearance, she had not strength enough to raise herself into the erect position; from that time to the present she has always stooped in walking, and soon became tired.

Her health was never entirely restored. About six years after the first indisposition, she was confined to her bed more than three weeks with a bilious fever. From this she suffered so much, that it was many weeks before she had sufficient strength to rise alone from her chair, or move, without the aid of some person, from one place to another. Her knees and legs have always been, and still are extremely weak.

August 16th.—She was well rubbed with a liniment this afternoon for more than an hour; a broad bandage being afterwards fastened round her back, she was placed flat upon the usual couch, and desired to confine herself entirely to that position.

September 28th.—She was still rubbed, and a wooden shield, fixed under the bandage, was placed along the whole length of her spinal column.

November 20th.—The bowels having been carefully regulated, the headache and dyspepsia are considerably relieved. She feels her back stronger, and can bend it with great ease as she lies on the couch.

She has remained free from pain in her back the last three months, and thinks she is strong enough to get up and walk alone.

April 20th.—Her countenance has become animated and clear. She was this day indulged in walking about her room five minutes, supported by two assistants. She felt no pain in her back from the erect position, or other inconvenience from the trial. The exercise is to be repeated every second day, gradually lengthening the periods.

May 25th.—She has lately extended her walks to a quarter of an hour, and repeated them daily. She is recommended to visit the sea-coast, and pass the summer there.

November 10th.—Miss P. returned home from Margate in excellent health and spirits. She, unaided, can walk a couple of miles with ease. The digestive organs are in good condition, and all the bodily functions properly performed. Her headache is gone, and she has greatly improved in general appearance.

April 22nd.—Miss P. has passed a pleasant winter; excepting a few attacks of catarrh, her health has been uninterruptedly good. She is prudent in her employment of exercise, and still devotes three or four hours every day to the horizontal posture. She proposes to reside, during the approaching summer, near the sea, and to bathe regularly, confidently anticipating the full recovery of her health and strength.

December 5th.—She remained two months at Margate. The cold bathing was very agreeable, and did her great service. Her strength is so much restored, that she feels neither pains nor weakness in the back. Her friends agree that she carries herself more upright and erect than at any former period. The countenance is also clearer and more animated. She no longer thinks herself an invalid, though she still continues to recline several hours every day.

March 22nd.—Miss P. has for a long time been in the enjoyment of good health, and her figure preserves its fine shape. She returned for a few weeks last summer to Margate, where she regularly bathed, and sailed upon the open sea. She also took several long rides on horseback. From that period to the present time, she has been in the habit of often walking for hours together, without experiencing fatigue or other inconvenience from the exercise.

Deduction.—This case adds its evidence to those already presented, of the immense amount of disease dependent upon an irregular state of the spinal column, and demonstrates the absurdity of attempting to cure by physic what can be cured only by curing the curve.

CASE XVI.

CASE OF SPINAL AFFECTION, ATTENDED WITH AFFECTIONS OF THE PULMONARY AND DIGESTIVE ORGANS, CURED.

Miss M. D., of Islington, when only three years old, was, to save her life, thrown by the faithful nurse out of the carriage road upon the foot pavement. Though much bruised and hurt by the accident, no bad consequences were apprehended. At the age of eleven she was forcibly pushed into a saw-pit, was much bruised, especially on the whole of the left arm, which became black, and very painful upon motion. It is now believed, that she never wholly recovered from the first injury. After the second accident, she became gradually more delicate and ailing. She was soon fatigued, had a continual leaning towards the left side, and the digestive apparatus was generally out of order. At the age of thirteen, her deformity became clearly apparent, although it had probably commenced several years before. Notwithstanding the endeavours of different medical practitioners of high character, it visibly increased, and her bodily activity continually declined.

When I was consulted, Miss D. was fifteen. The spinal column had sensibly given way from the top to the bottom; making, besides the double lateral curvature, other great contortions. Every vertebra was moved out of its proper place. The ribs, by their strong attachments to the vertebral pillar, following its irregularities, were also much displaced at the sternal ends. The breast-bone, clavicles, and scapulæ, were in consequence sensibly displaced. From these various derangements, the trunk was greatly reduced in length, and equally augmented in circumference. The spine and the bones of the chest being much deranged, all the internal organs became misplaced, and infirm health of course ensued.

In the present instance, every internal function had been impeded for years. Constant difficulty and shortness of breathing, increased by the slightest movement of the body or the least agitation: sneezing was often attempted, but could be seldom performed. There was a constant dry cough. The heart beat irregularly, and struck violently against its bony covering. Appetite depraved, uncertain, and defective; pulse small and weak; bowels usually constipated; menses have never appeared. As the spinal column recovered its natural position, the ribs, sternum, clavicles, and scapula all recovered their positions. By this restoration the trunk is much elongated and more shapely. Among the happy results of this important change in the bony structure, she is not only taller, and transformed into a beautiful figure, but the internal organs, having regained their natural positions, their healthy functions again manifested themselves. By this simple proceeding, and without the aid of drugs, good health has been regained, thus terminating her otherwise interminable afflictions.

CASE XVII.

CASE OF PARTIAL PALSY AFFECTING THE RIGHT LEG, CURED BY CORRECTING THE LUMBAR SPINAL CURVATURE.

Master T. C., nine years of age, of sanguine temperament, of general good health, although of a delicate constitution, with soft skin. He is afflicted with a protuberant curvature six inches long in the lower part of his back, comprising the three last dorsal and two or three upper lumbar vertebræ, all of them having suffered a partial rotation upon their axes towards the right, by which the transverse processes on that side are considerably depressed, while the opposite ones are proportionately elevated. He experiences great difficulty in walking a few steps, obliging him, if extending his walk, to use crutches. The right leg is nearly useless, and is much shorter than its fellow. He cannot stand upright unless supported. He cannot extend the right foot even in bed. The great weakness and want of sensibility in this case are probably occasioned by the sinking and partial turn of the luxated vertebræ towards the same side; the nerves consequently escape through the intervertebral foramina at unfavourable angles; by this deviation, thus impeding the natural tone or nervous energy of the affected members.

This distortion was evidenced three years and a half ago; the bones being rotated and turned towards the right, but not arched. Subsequently, a large issue was formed on each side of the last dorsal vertebræ. After the issues had discharged a *large amount of purulent matter, and weakened him very considerably*, a slight deviation was first discovered between them. He persevered in the recumbent position for nine months, and the issues for the same period of time. Finding that the distortion continued to increase under this treatment, and that his strength rapidly declined, the issues were closed, and he went to Brighton. His parents conjecture that his state might have proceeded from his having fallen among some loose wood a short time previous to the appearance of the deformity. He complained a great deal at the time; but as the pain subsided, the accident was forgotten, until the deformity appearing, the remembrance of the accident revived.

Besides the gentleman who established these purulent discharges, three eminent practitioners had been consulted at different times, who approved of the issues and the copious discharge which proceeded from them. They all, moreover, declared positively that the cause of the complaint was wholly subdued by the remedies employed. They also asserted, that although the protuberance could not be reduced, because the vertebræ were joined together by a *bony connexion*, it would never get worse. Notwithstanding these positive assurances, and the incessant anxiety and care of the boy's distracted parents, the swelling visibly enlarged. In the alarm and despondency consequent upon this state of things, Dr. Harrison was applied to. After a careful examination of the parts, his opinion was, that so far from osseous union having taken place, the vertebral structure had never been affected; that the complaint was entirely fixed in the articulating fibrous compasses of the joints, and that it admitted of an easy and speedy cure. Encouraged by this explanation and assurance, the boy was forthwith confided to his care, placed in the recumbent position, and treated in the usual way.

Three months after the spinal swelling is greatly diminished, and includes only three vertebræ. He has nearly recovered the sensibility and the use of his right leg.

The month following, the tumour was reduced so much, that only one vertebra protruded, the transverse process being easily felt on the left side; and at the expiration of the eighth month from the commencement, the lumbar spine had recovered its natural figure, and the inferior extremities their lost sensibility and action: they are of the *same length*. The cure was therefore pronounced to be complete, and the strengthening plan was adopted.

March 15.—He is become a tall stout youth, with a rosy complexion, and is in the enjoyment of excellent health. As the vertebral pillar remains in good order, he continues erect in his carriage, and perfect in his gait.

DEDUCTION.—This case exhibits the amount of torture and injury inflicted on the system by the views which prevailed previous to Dr. Harrison's researches on this most important subject of spinal curvature.

CASE XVIII.

CASE OF LATERAL AND OUTWARD CURVATURE.

Miss H.—This case of deformity was one in which the letter S represented the form of the spine, the spine being completely lost under the right shoulder blade, which shoulder was so much raised, that her *ear-ring touched it.* The ribs of the right side were elevated at least four inches, and the hips were equally displaced, so as to form an excessive deformity.

Six of the most eminent practitioners in London had, in the presence of each other, pronounced that she *must die in less than three months*, and they did all they could to prevent her from being placed under Dr. Harrison's mode of treatment.

To show the violence of the opposition which Dr. Harrison had to encounter, it is proper to state that the father of this young lady was a medical practitioner, in general practice in London. The medical men, some of whom now hold the highest positions in the chartered corporations of surgeons and physicians, were so offended when the anxious and affectionate parent, having determined not to lose (when no prospect of recovery under their skill was present) an opportunity, which was afforded by Dr. Harrison's mode of treatment, that they at once gave up his acquaintance, refused to send him any prescriptions, and the practitioner was reduced to comparative want, and on his death-bed declared to an old servant of the family, "*My daughter's cure has been my death.*" He died of a broken heart.

She commenced the treatment at the age of 17, in the year 1820. This young lady was, as Dr. Harrison predicted, restored to good health, and is now the mother of eight children (July 1840), the cure remaining perfect after twenty years.

DEDUCTIONS.—This case is a proof that the patient, affected by deformity, cannot only be cured, but the cure rendered permanent. The history of the case presents a lamentable exhibition of the cruelties to which professional pride gives birth; to restore to health a patient who was to die in three months was an unpardonable offence, which required a father's ruin as an expiation.

CASE XIX.

CASE OF CURVATURE OF THE SPINE, WITH ONE LIMB SHORTER THAN THE OTHER, AND ATTENDED WITH THE LOSS OF THE POWER OF USING THE LOWER LIMBS, CURED BY DR. HARRISON.

Miss M. H., aged 13, of the sanguine temperament, lax fibre, and with her left leg an inch longer than the right, began the usual treatment June 4th. She had lost the entire feeling and use of the lower extremities. Frictions to the limbs, or a smart stroke upon the soles of the feet excited no sensation: they were always cold; the skin was mottled and of a dull hue. She had been some months under the treatment of an experienced surgeon, who declared when the *toes* were *insensible and without motion*, he had never witnessed a cure. On examining the naked back, which he had neglected to do, most of the dorsal vertebræ were found twisted towards the right, the ribs forming an elevated wreath in the same direction. The lumbar hollow was more than obliterated; the spine actually projected. From the displacement or subluxation of so many vertebræ,

Fig 1

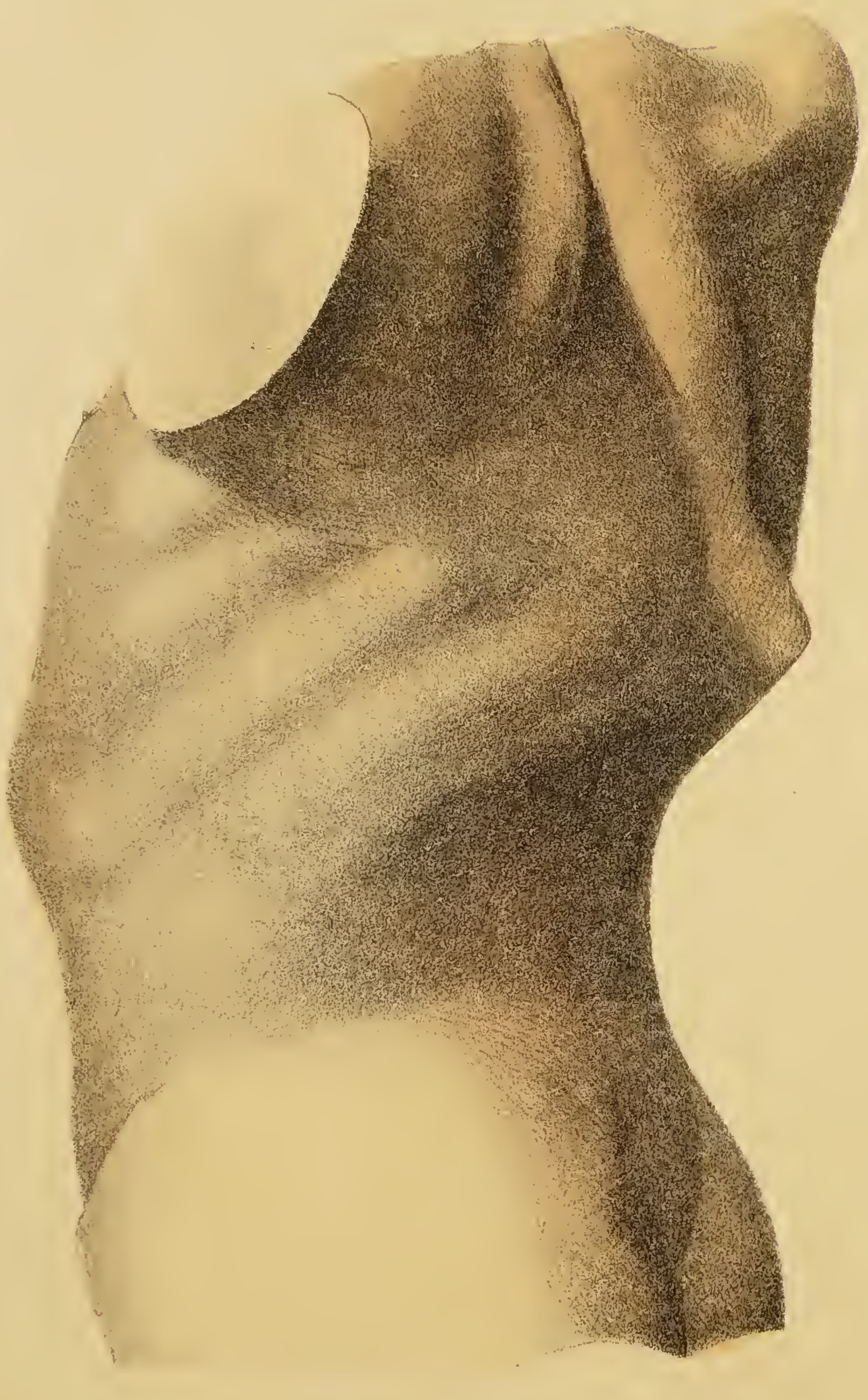
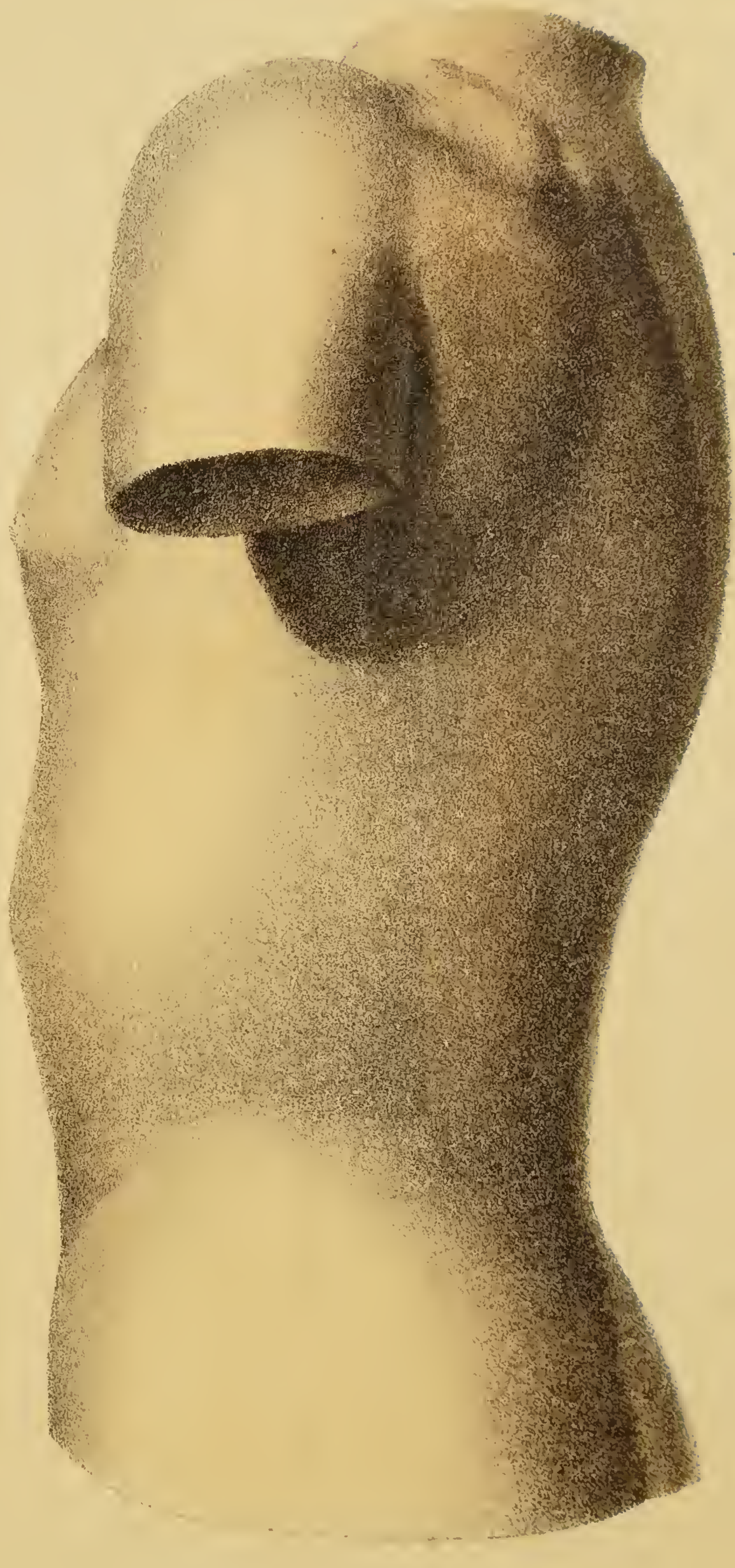


Fig 2



the spinal cord was compressed, so as to prevent the usual communication between the brain and paralysed members; hence the will had lost its power over the parts, and impressions made upon them could not be carried to the sensorium. By correcting the deformed spine, she soon *gained her feeling:* it afterwards became so *morbidly acute*, that she shrunk from the touch. In a few weeks, the sensibility was rendered natural, and remains so. In less than a month, a very slight action was perceptible—first in one foot, and then in the other. The motion of the limbs has kept pace with the improvement in her back.

February 28th.—The action of the limbs, and natural figure of the spine being completely recovered, the primary treatment was discontinued.

April 2nd.—The patient was this day suffered to rise from her couch, and indulge in a short walk, which she performed with ease and without feeling inconvenience from the exertion. Although she had remained constantly on her crib since last June, she experienced no difficulty in leaving it, or uneasiness from being erect.

DEDUCTION.—From these facts, the conclusions of Dr. Harrison are clearly established, first, that the cause of paraplegia was in the back; and second, that wherever disproportion of the inferior extremities occurs, the medical practitioner will, in future, neglect his duty unless he examines the condition of the back-bone.

CASE XX.

CASE OF OUTWARD CURVATURE—CURED.

Miss S. S. T., of Newington Green, aged 9 years, has always been very delicate. It is believed that she was born under the seventh month, but was remarkable for the symmetry of her person and the beauty of her features. Her countenance is now dull, sallow, and contracted; the eye is languid, and she has an antiquated look. She has a deep and most distressing cough, which returns in fits and at short intervals. Such is its violence, that at every attack the attendants are alarmed with the apprehension of its proving fatal. The dorsal vertebræ rise gradually from the neck to the ninth inclusive. All the ribs are more or less displaced; the three inferior ones are elevated, with two of the superior lumbar vertebræ, into a large projection. Six ribs on the right and five on the left swell out with them to assist in making the protuberance. The chest is much contracted in front and behind.

The complaint was occasioned by falling upon the ice in January, 1820. It was first discovered on the 25th of the following month, and has been gradually increasing ever since. In the previous autumn, she often felt pain in her back after stooping. She measures only three feet six inches. Her parents are of opinion that she has not grown for the last year and a half. Appetite is remarkable, being equal to that of two healthy adults; but her food never seems to impart any nutriment. Bowels are obstinately constipated; the motions have a strong and peculiar odour, something like the washings of a foul gun; they are generally hard, in some parts clay-coloured, and in others, having the appearance of pickled. She is subject to very severe and most distressing pains in her legs and thighs, which are often cold and numb, and she is troubled by a constant necessity to pass water.—April 3rd.

Her spirits are much more lively; she is no longer fretful, and the appearance of the countenance is greatly improved. She has gained flesh and weight since she began the treatment. Appetite is natural, her motions are good; she is no longer subject to hasty and irresistible calls to make water. The heart, which beat forcibly and much below the natural position, beats at its proper place; its strokes are no longer violent or particularly strong. The cough is much relieved, both in severity and force. The protuberance is greatly reduced; nine of the eleven ribs have been nearly restored to their proper situations; two on the right side remain something displaced. She is increased in height two inches.—May 16th.

She is always cheerful, countenance is clear, and is much improved in her general appearance. The cough has entirely left her. Her chest and loins are much broader and finely turned. Appetite is regular and good, but not extraordinary: she lives upon fresh animal food for dinner, with a suitable proportion of vegetable matter, and this diet agrees with her. The ribs on the left side have been some time replaced, the eighth and ninth on the right side are still slightly elevated. All the vertebræ except the eleventh and twelfth dorsal and first lumbar have been entirely replaced, and these are not more than a quarter of an inch too high.—June 25th.

The recumbent position has been strictly observed, and her health has been uniformly good ever since the last report. The swelling is wholly removed, except in the three vertebræ formerly mentioned, which are still slightly protuberant, but the ribs have been sometime re-instated. She now measures in length four feet four inches.—October 10th.

Miss S. S. T. gets up every day and walks about for some time with great ease. The health, complexion, and general appearance continue unimpaired.

She has through the whole confinement been chearful and happy, from a strong prepossession that the plan she was pursuing would ultimately restore her to the full possession and enjoyment of all her faculties. I have the gratification to add that her patience and most sanguine anticipations have been amply rewarded.—December 5th.

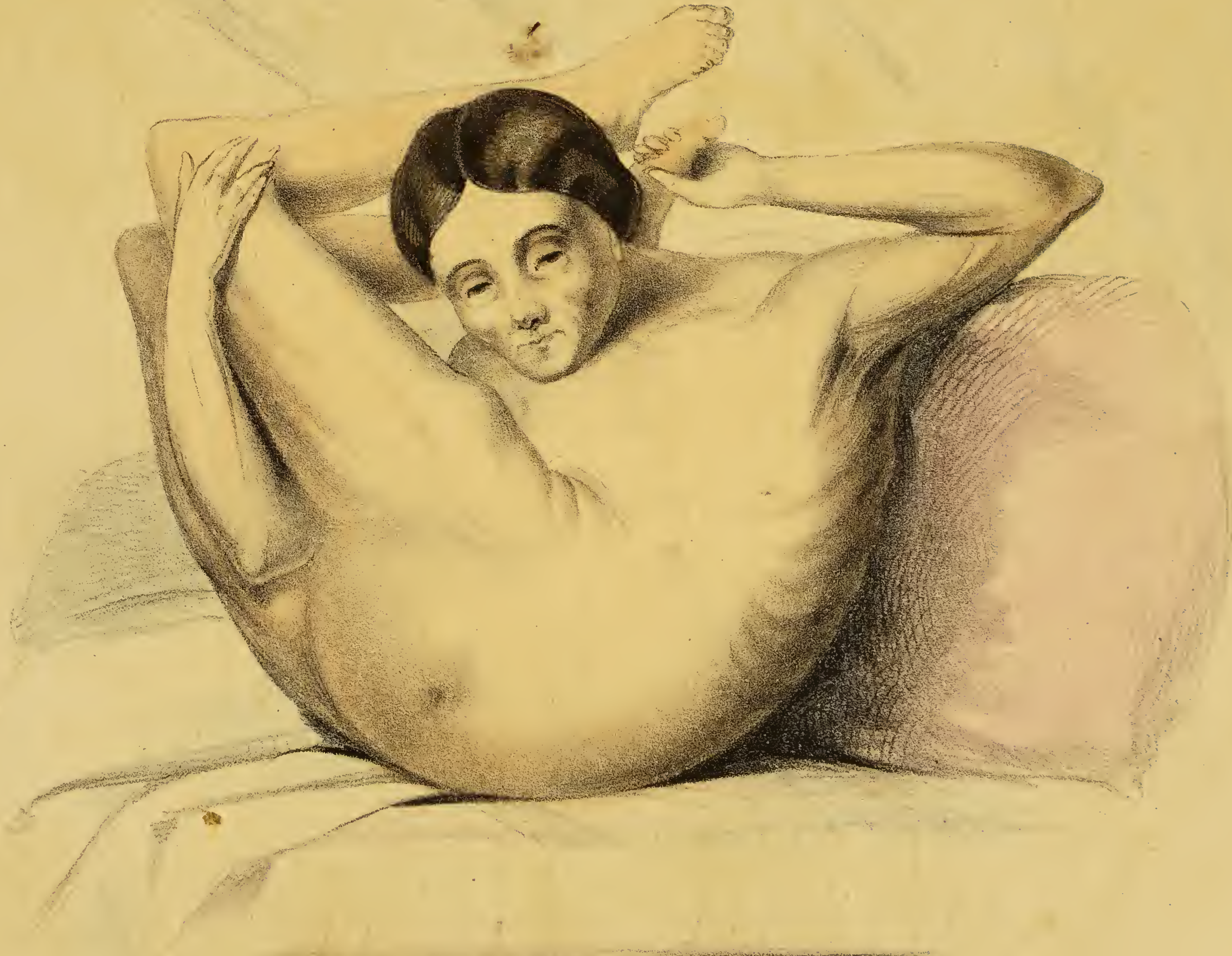
Plate XII., fig. 1, taken before, and Plate XII., fig. 2, after the treatment concluded.

Deduction.—This case exhibits the intimate dependence between the digestive organs and the spine: here were inordinate appetite and constipation: the spine cured, the appetite becomes natural and the bowels regular.

CASE XXI.

THE CASE OF SARAH HAWKES.

November, 1831.—S. H., when in the 14th year of her age, being small, and of delicate constitution, was afflicted with a most extraordinary contortion of figure, (plate 13.) The inferior extremities, which have wholly lost the power of motion, have their sensibility morbidly increased. The toes are turned inwards, and press upon the soles of the feet with such firmness, that they cannot be moved, even by considerable force; so that the nails have not been properly cut from the commencement of the ailment, and not at all cut for these last three months, she being unable to bear the handling of them for that purpose The hip, the knee, and the ankle-joints, are stiff and immovable; the knees and the ankles resting firmly upon each other respectively; the right arm is lodged between the thighs, with the hand turned upwards; in this manner it has been confined during the last two years. Her trunk and lower extremities are retroverted to such a degree, that the feet rise above the left shoulder, and can there be laid hold of by the patient with her left hand. The fore part of the trunk and the inferior extremities describe together, more than three quarters of a circle. The fore part of the crest of the right ilium actually passes five or six inches under the edge of the sternum. The right buttock is forced under the scapula of the same side. The middle of the spinal column presents the shape of a horse-shoe, with the fore part of the shoe slanting upwards, and the back part turned into the right flank. In this strange and distressing position the patient is obliged constantly to remain; having lived,



for the last two years, entirely upon milk, and the pulpy parts of fruit, either fresh or dry. The pulse is feeble; appetite languid; respiration always difficult, but more so when the atmosphere is moist, or any one stands near her bed. Her voice is weak, and the utterance of a few words exhausts her. The right cheek and the arm of the same side frequently assume a blackish hue *simultaneously*, and, on these occasions, breathing becomes so laborious and irregular, that death is expected every moment, and sometimes appears to have actually taken place. Her breath emits at all times a disagreeble odour: the heart also appears to be raised considerably from its usual site, and frequently palpitates, conveying a very uneasy sensation, which she herself describes as a violent fluttering in the upper region of the chest.

On account of the awkwardness of her posture, the *urine is necessarily received upon folded cloths;* and she is frequently called to void it. This fluid is very offensive; she knows, however, when it escapes; and can, for a few seconds, retain it.

The *fœces are discharged, involuntarily and unconsciously, upon the right cheek; and, if not prevented would glide into the mouth, the head being fixed immovably to the sternum.* The evacuations are always dark and fœtid; when solid, of large size, being retained longer than usual, in consequence of the sluggish action and the insensibility of the rectum.

She herself accounts for the origin of this distortion from the circumstance of having received on the neck, from the fist of another person, a blow of so violent a description as to drive her over a form, when she fell down in a fainting fit. On recovering her senses, and attempting to eat her dinner, she was alarmed at finding a difficulty in swallowing, and by perceiving an unusual lump in her throat, both of which still remain. In the front the lump is very conspicuous, and nearly the size of a pullet's egg, cut in two lengthwise. The posterior surface is uneven; but there is a particular indentation in the lower part. The cervical vertebræ are huddled together, forming an irregular tumor. By these subluxations, or misplacements, the chin is pushed over to the left, and made to rest continually upon the chest.

In little more than a week after the violence alluded to, five or six fits of a similiar nature were experienced. Soon after the first she had pains, attended with cold and heat, in the loins, and lameness in the right hip. These continuing to increase, she was compelled, on August 28th, 1828, after several inffectual struggles, to confine herself to bed, and never, since that period, has she been able to rise. About five weeks after she was thus confined, she was visited with a peculiar and indescribable sound in her back and head, resembling the cracking of the fingers, or the snapping of a stick—the report being distinctly perceptible in the room below. It began at the bottom of the spine, ascending rapidly to the lower part of the neck, accompanied by an increase of heat through its course; this was again, however, quickly followed by cold in the same parts; the noise was loudest at the neck.

At this epoch the right arm became violently agitated; the left was suddenly drawn back, with the fingers bent and stiff; the eye-lids opened and shut in quick succession; vision became indistinct, and the voice failed. The chin was forced upon the breast with strong convulsions, while the mouth remained wide open. After the pause of a few seconds, the snappings darted again into the back of the neck; now ascending to the top of the head, where they suddenly stopped, making at the time of their cessation, an unusually strong report.

The mother of Sarah Hawkes described the course of these noises with the greater confidence, because at night she lay with her own head close to that of her child, in order the better to trace the order and the movements of this singular phenomenon. When the noise reached the head, it was accompanied by greater heat than elsewhere, (perceptible to other persons besides the patient), and a greater degree of cold invariably succeeded. The vertex and the sides of the head were also, for a short time afterwards, so benumbed and insensible, that she could not feel a smart stroke or pinch inflicted upon any part of them.

In this way the rattling continued, incessantly harassing the poor girl for more than a month; at the end of which it entirely ceased. On first hearing the sounds, (and for sometime afterwards,) her mother was so fully convinced of their proceeding directly from the ribs, or from the vertebræ rubbing against each other, that she frequently turned the child, expecting to see an evident movement in some particular part, and thus ascertain the exact spot, whence the noise proceeded; but these examinations always ended in disappointment, for neither she nor any other person, after bestowing the greatest care and vigilance, could perceive the slightest disturbance, either in the spine or the ribs. Both were, at all times, tranquil. No unusual motion could be observed or felt, although the crackling was audible enough, and, apparently confined to a particular spot, to which eyes and fingers were both directed.

After this perplexing symptom had taken its departure, she became *constipated in her bowels.*

During twenty-nine successive days no alvine evacuations took place: the abdomen became exceedingly swollen, and was very painful, while there was a remarkable glistening of the integuments. About the same time she was attacked with frequent spasms in the face, eyes, and right hand, but most of all in the mouth, the chin being now drawn down upon the sternum, where it remained fixed for fifteen weeks and three days. During this period she lay speechless, with her mouth continually open, excepting when forcibly closed with a bandage. It at last *suddenly and spontaneously shut;* and, in the course of an hour, she was able to speak a few words.

This attack was scarcely over before the body, and, after it, the limbs, began to *bend backwards;* but there was no return of the fits, cramp, or spasms. Her deformity, increasing for three months, at length attained its present magnitude. From that time matters have remained nearly stationary;

and, during the whole period, in spite of her melancholy and helpless situation, the general health has remained unimpaired, with the exceptions already mentioned. In the course of her confinement she was *bled* repeatedly in the arm, and had *setons*, *issues*, *blisters*, and *leeches*, successively applied to different parts of the back; but neither they, nor any of the routine means usually employed, at all relieved the symptoms, or retarded the progress of the complaint. Before she left her native place, (Dunmow), she was examined by not less than forty medical men, some of whom went from the metropolis, and more distant places, for the purpose; she had been removed to London, and exhibited there upwards of a month, before Dr. Harrison heard of her. The first object of this journey was partly to obtain alms; but chiefly to procure, if possible, some alleviation of her afflictions, through the benevolent exertions of the faculty. An amiable young lady, whose figure Dr. Harrison had restored, (by which means she had been rescued from pulmonary consumption), informed Dr. Harrison of Sarah Hawkes, and desired him "to visit the poor girl, as an object of compassion and wonder," not having the slightest idea that any relief could be administered.

DR. HARRISON, HAVING CAREFULLY EXAMINED INTO THE CASE, UNDERTOOK THE CURE.

November 15, 1831.—He commenced the treatment, by thrusting folds of soft linen between the knees and the ankles, in order to separate them. On the day following he could stir the arm a little. Upon the 19th, the limbs being considerably parted, he had the pleasure of removing the arm from its long imprisonment; but so great was the pain, upon taking it from its confined situation for a few minutes only, that she *urgently desired to have it replaced.* Having disengaged the arm, Dr. Harrison directed his attention to the back, in order to ascertain the extent of the deformity, and devise appropriate means of treatment. Upon turning her over for this purpose, great irregularities were found in all the cervical vertebræ; one of the lower was driven forward, leaving an evident hollow behind. He resolved upon stretching the neck, hoping by this measure to replace all the vertebræ, an experiment, which led to the *immediate* restoration of the natural state and the appearance of the neck.

Friction, from the first, was almost continually applied to the arm and the scapula, in which parts the power of motion was rapidly increased; and, on the 22nd, (seven days only from Dr. Harrison's beginning to attempt relief,) the arm was finally released, and restored to perfect liberty; and, though weak, she could move it in every direction, as well as the other.

November 24th.—Sarah Hawkes was this morning carried from her bed, (where she had lain, without removal, curved in her body and limbs, as described, for more than *three years*,) and, soon after the removal, she *threaded a needle with her right hand*, that hand which had been fixed between her thighs.

27th.—She had been turned upon her face for the three last days, in order to permit a sketch to be taken of her back, as well as to have it and the cervical vertebræ well rubbed. In this posture she remained for six or eight minutes, the first time, and has borne the change better upon every repetition. The tumour of the cervical vertebræ, on the outside, is entirely reduced, and the neck sensibly elongated. She now swallows with ease, and says that the lump, which she had felt in her throat from the time of receiving the blow, has, since the extension of her neck yesterday, the 26th, quite subsided.

30th.—Has eaten two boiled eggs, and bread and butter several times, with great pleasure.

A shield was yesterday forenoon placed upon the back, and confined *in situ* by means of a pair of stays. The unnatural and unsightly hollow of the back was filled up (almost entirely) with linen and tow. The hollow of the back is already diminished, and the front of the body is straighter. There is great tenderness in the whole spinal region.

December 8th.—Since last report she is, in every respect, much better. She can now move freely every large joint of the lower extremities, and, to a considerable extent, in whatever position she may be lying. The right arm and hand have, for several days, been quite well, and the protuberance in the left side of the abdomen, is nearly gone. The hollowness in the loins is also much lessened, and the muscular enlargement on the left side of the spine has almost disappeared. The tenderness of the back too has nearly subsided, for she can now bear to have it smartly rubbed for a considerable time, and even derives pleasure from the operation. She is in good health, is more plump, and generally much improved in appearance; sleeps well, and swallows with perfect ease.

December 20th.—The patient is, in every respect, better; the limbs have freer action, and the fore part of the trunk exhibits but little deformity. The lumbar hollow is also reduced; the muscular enlargement is nearly gone; and the only tenderness remaining is over the eighth dorsal vertebra, where *the seton was formerly placed*, which had been kept open seven weeks and then dried up, without having afforded any relief.

January 10th, 1832.—She daily improves: has the proper feeling and the free use of all her limbs. The right arm has, for some time, recovered its natural strength; but, though the lower limbs are active, they are still weak. The only defect remaining in her back is a slight curvature in the lower dorsal and upper lumbar portions of the spine, with a slight hollowness on the left.

February 12th, 1832.—Her health continues excellent: she sleeps well, and increases in flesh. The slight remaining curvature is confined to the three inferior dorsal vertebræ, which were formerly the most distorted.

The feet have recovered, and, to all appearance, have regained sufficient strength to sustain the whole weight of her body; though the right, (which was always the weaker), is still more infirm than the other.

May 8th.—Of late there has been no perceptible difference, either in the strength or the activity of her limbs; attention has, therefore, been chiefly directed to the vertebræ. Two of the vertebræ have, for some time, been wholly replaced; but the middle one, (which formed the top of the præternatural arch,) having still resisted the means employed, and continued a little out of the line, means were employed by which the vertebra was compelled to enter the column, and was restored to its natural sitution. Under this treatment the recession daily became less, and the replacement easier; rectification proceeding until the bone resumed its proper and permanent place in the spinal column.

July 24th.—Since last report the vertebræ have remained stationary. The spinal column has also been repeatedly examined, both before she left the crib and after returning to it, by experienced practitioners, several of whom were entire strangers to Dr. Harrison, and was declared to be perfect. Sarah continues to enjoy excellent health: she has walked for a few minutes in her room six different times, at intervals of a week: she has the unrestrained use of her lower extremities, moving them freely in every direction, both in bed and while on foot.

Dr. Serny attended to the case, by the request of Dr. Harrison, at the latter period of the treatment.

Sarah Hawkes is now perfectly recovered, in good health, and able to walk several miles, and is not a little proud of her figure. (See plate XIV.) She is married, is the mother of four children, and attends to her domestic duties, &c.—1849.

Deduction.—This case is pregnant with instruction: it demonstrates how much constipation depends upon the state of the nerves of the spine. Sarah Hawkes had no action of the bowels for twenty-nine days, and yet when her spine was cured, the bowels acted regularly; a circumstance of continual occurrence under the treatment.

This case demonstrates that however deformed the patient may be, hope is not entirely shut out. Great credit is due to Dr. Harrison; had he done no other work than this cure, he would not have lived in vain. He has demonstrated the power of remedial means when used in accordance with the will of the Creator.

CASE XXII.

CASE OF DOUBLE LATERAL AND POSTERIOR CURVATURE, CURED.

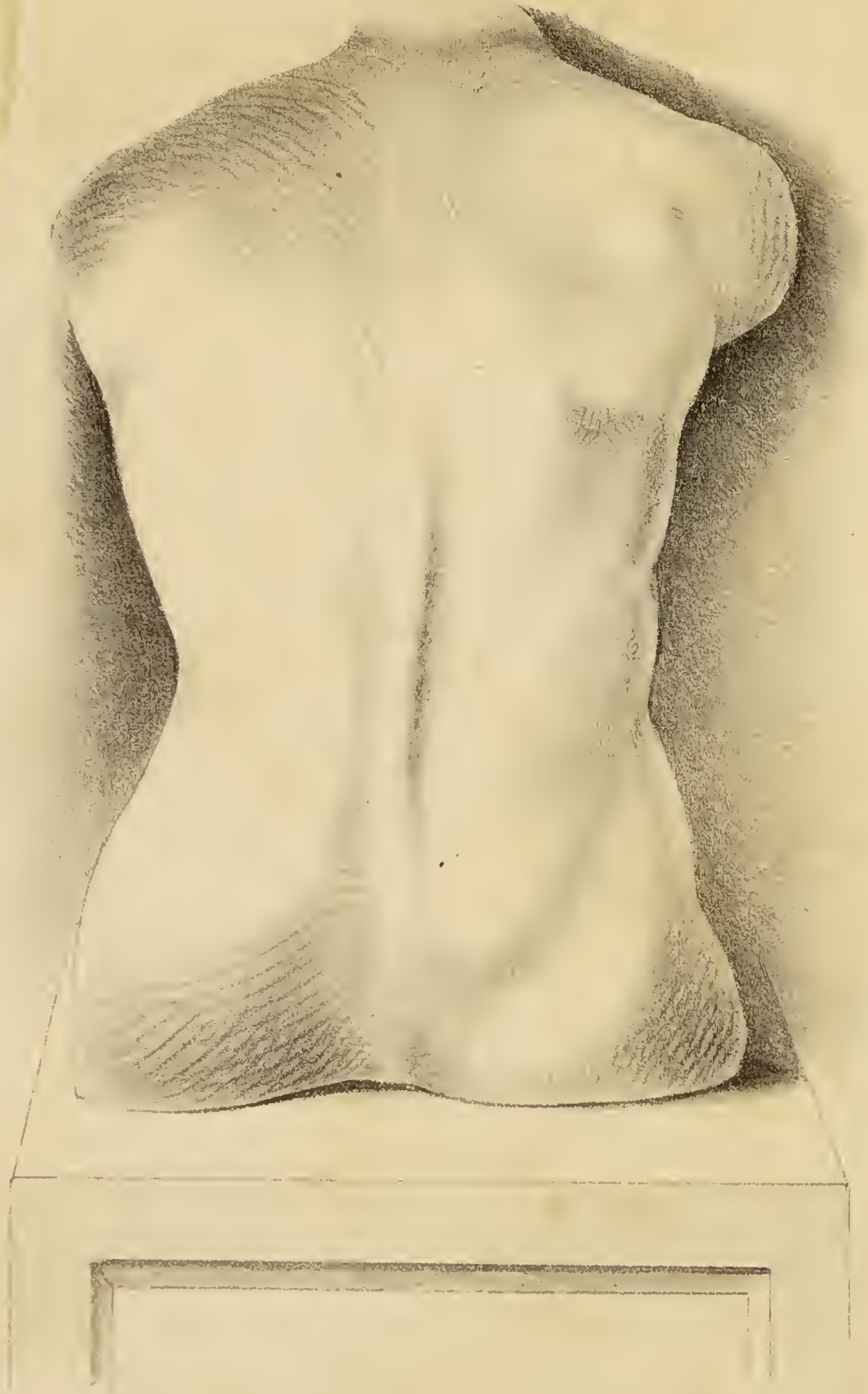
June, 1848.—J. R., aged 25, was seized in 1838 with an illness, which continued six weeks. During the time she had a fit, in which she fell. She suffered very much afterwards from pain in the head and right side, which troubled her more or less till March, 1840. Another illness occurred, said by her medical attendant to be an affection of the liver. She had besides an enlargement of the glands of the neck; twelve leeches were applied round the throat, and a blister on the side. A fortnight after, eight more leeches were applied to the neck, and medicine was taken every day for nearly twelve months. As no benefit, but much weakness resulted, medicine was then discontinued.

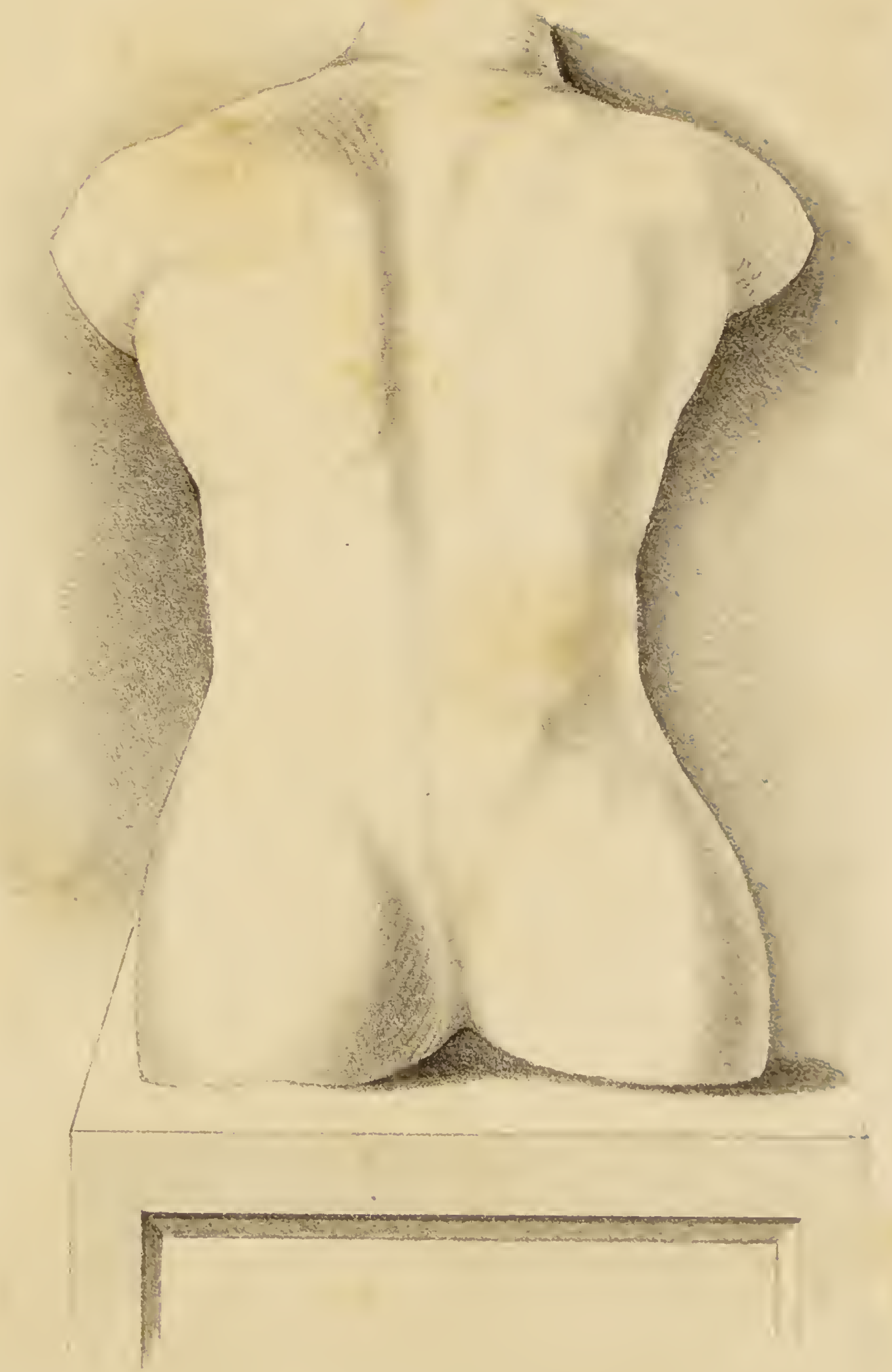
The following October a physician was consulted, who said her state was very precarious, and the medicine taken for the throat had destroyed the constitution, and that pulmonary consumption threatened. After being under his care six months, the neck was very much reduced in size, and the general health became much improved.

In May, 1844, she became a patient of the infirmary at N—, and continued so for eleven months. She suffered from a violent cough and severe pain in the chest and right side, for which blisters, &c., were again applied. In the summer of 1846, she had a similar attack attended with extreme weakness of the back.

The exertion of walking caused great pain, and she required to lie down two or three times a day.

In April, 1847, an inflammation occurred which settled in the spine, confining her to her bed for three weeks. For thirteen weeks she was scarcely able to walk.





When so far recovered as to be able to undertake a journey to London, she was advised by a friend to consult Dr. Epps, under whose care the health gradually improved, but the pain in the back remained nearly the same.

In October Dr. Epps examined the back, and declared the spine curved, and advised her to apply to Harrison's Spinal Institution. She was admitted a patient on the 29th of June, 1848.

Cured January 2nd, 1849. (Plate IX.)

DIRECTIONS FOR PATIENTS.

As many patients wish directions as to the plans to be adopted after the spinal curvature is removed, the following copy of a letter to Mrs. Wells from Dr. Harrison (which letter he wished to be considered as a *circular* for the direction of patients after they have been cured) forms the conclusion of this work.

"*Holles Street, January* 30, 1824.

"As you are shortly to leave London, I am desirous, before your departure, to trouble you with some advice respecting the future management of your health.

"I wish to caution you not to place in danger the permanency of your recovery by hasty and rash exertions. With proper attention and unwearied vigilance, you cannot miscarry; but unless you submit to the inclosed directions, you will assuredly fail. The ligaments will slowly elongate, and you will gradually lose all the advantages of my successful exertions for your benefit.

"I am anxious to impress upon your mind the great necessity of continuing to maintain undeviating recumbency till the predisposition is entirely subdued.

It is impossible to determine with certainty in any person how soon the spinal column shall have acquired strength enough, after the treatment is finished, to maintain an erect deportment and perform the usual offices of life without danger. I am inclined, all circumstances considered, to recommend to you constant lying for the next six months; afterwards the effects must be carefully watched, and the periods of sitting up gradually extended, as they can be safely indulged. In relaxed habits, and in all cases for a long time after the spine has been restored, the erect must be frequently exchanged for the reclining posture, in order to relieve the back from injurious pressure, and enable the vertebral joints to freely exert their inherent elasticity. The spinal column must be frequently surveyed by some careful person, and the slightest deviation immediately corrected, otherwise it will acquire permanence and increase by delay. It is of importance to remark, that along with distortion, the health always declines, and the countenance becomes aged and contracted. These and various other distressing consequences may be prevented, by submitting to some temporary sacrifices; so trifling indeed when compared with the magnitude of the danger, that I am sure you will not hesitate to comply with whatever is required to prevent a relapse. When you are doubtful as to the effect of any act, refrain from the performance of it. You cannot suffer by over-care, though you may easily err by gratifying your inclinations. The frictions cannot be too long continued.

"So many considerations of health and of usefulness are connected with a proper disposition of the vertebral pillar, that I need not, I hope, employ more words to impress upon your mind the great necessity of uninterrupted vigilance for the next few years."

LONDON:
PRINTED BY JOHN TRAPP, BUDGE ROW, CITY.